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Front Cover Photo: Head Works Area of Upper Trishuli 3A Hydro Electric Project (60 MW)

Back Cover Photo: 132/33kV, 30MVA Godak (Illam) Substation



NEPAL ELECTRICITY AUTHORITY

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Government of Nepal



Hon'ble Radha Kumari Gyawali
Minister for Energy



Private Secretariate
Singha Durbar, Kathmandu
Nepal

Ref No.:

Message from Chairperson

I am immensely happy to express my thoughts as Nepal Electricity Authority (NEA)'s Chairperson on the occasion of its 30th anniversary. I would like to thank to all the employees of NEA and its consumers on this auspicious opportunity.

The main three responsibilities of NEA are generation, transmission and distribution of electricity. Recently, the Government of Nepal has established the National Transmission Grid Company and the process has begun for the registration of Public Electricity Generation Company also. After then, the environment will be created for NEA to care for specialized distribution works in efficient way.

NEA has started the preliminary works to control the electricity loss and easiness to the consumers with the help of Smart Meter and Smart Cards. It will also help to collect the electricity tariff in efficient way. The difficulty of customers in the meter reading will be improved ensuring the tariff bill payment on the monthly basis.

We are greatly feeling the responsibility to the consumers for reducing load-shedding with the development of solar power and the completion of under constructing hydropower projects in time.

NEA employees have to work in the risky zones. The security, treatment and insurance of all the employee will be assured and the evaluation of

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those staff will be recorded for their high moral respect. We are committed to assure the good future of all the staff.

The NEA economic health is worsening with the loss of around 7 billions rupees annually. To get recovery, more projects shall be constructed by NEA itself. It has given the high priority to complete the national pride project, Upper Tamakoshi Hydropower Project and other under constructing projects, Chameliya and Kulekhani-III Hydropower Projects in time. Similarly, NEA has to construct Upper Trishuli 3A and 3B, Upper Arun, Dudhkoshi, Uttar Ganga, Tamakoshi-V and Rahughat Hydropower Projects in the fast track.

At the end, I wish to congratulate all the NEA staff for their sincere efforts while performing their duties and they would be successful in their personal as well as organizational bright future.



(Radha Kumari Gyawali)
Minister for Energy
Government of Nepal and
Chairperson, Nepal Electricity Authority

Board of Directors



Chairperson
Radha Kumari Gyawali
Minister for Energy



Member
Mr. Rajendra Kishore Kshatri
Secretary, Ministry of Energy



Member
Mr. Suman Prasad Sharma
Secretary, Ministry of Finance



Member
Mr. Santosh Narayan Shrestha



Member
Mr. Laxman Prasad Agrawal



Member
Mr. Manoj Kumar Mishra



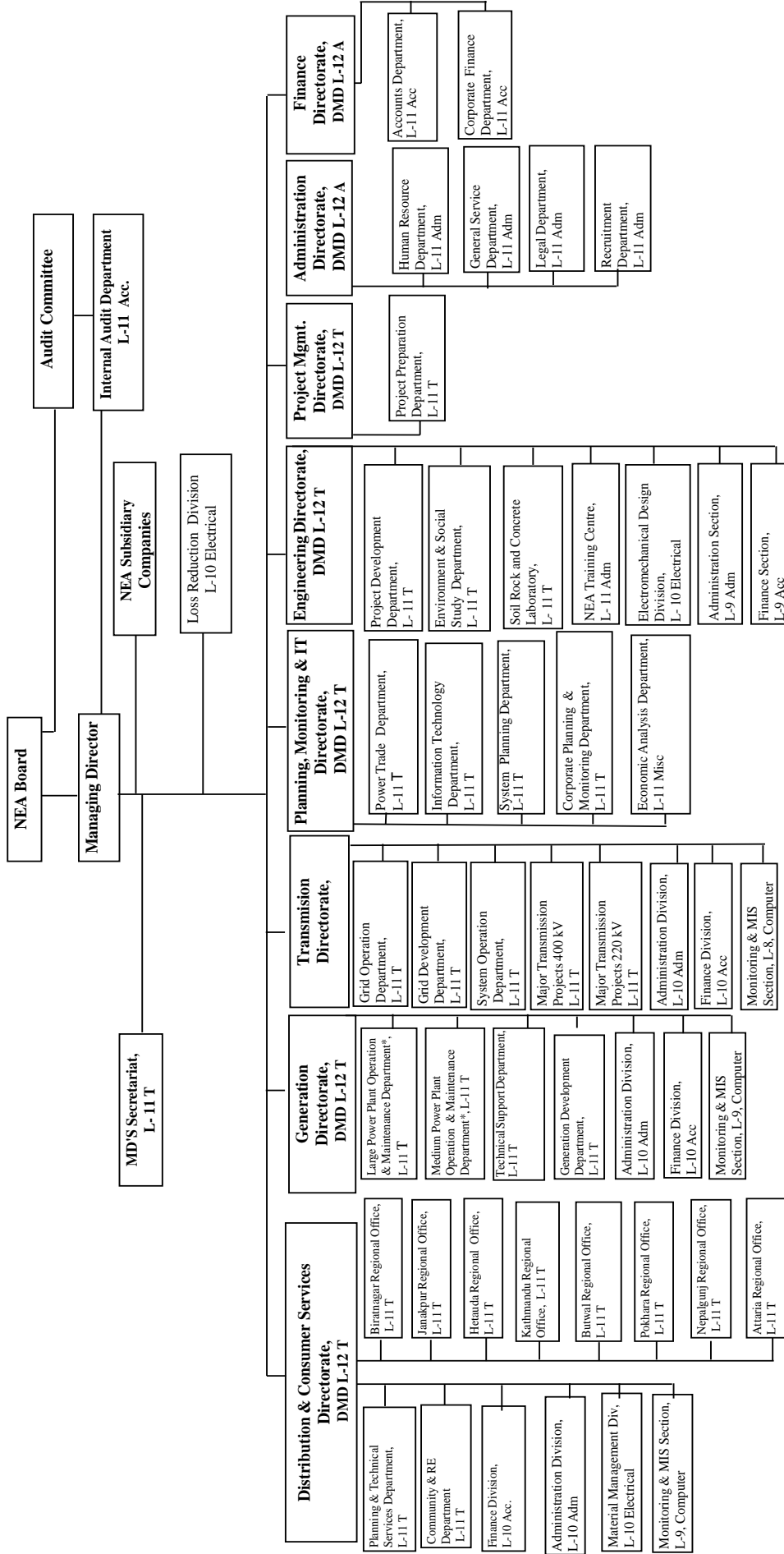
Member
Mr. Suraj Lamichhane



Member Secretary
Mr. Mukesh Raj Kafle
Managing Director, NEA

NEPAL ELECTRICITY AUTHORITY

Organization Structure



Note : * Large Power Plant operation and Maintenance Department will be responsible above 30MW
 * Medium Power Plant operation and Maintenance Department will be responsible upto 30MW
 T = Technical Services; Adm = Administration services; Acc=Account Group; Misc = Miscellaneous

Deputy Managing Directors



Mr. Ram Chandra Pandey
Deputy Managing Director
Distribution & Consumer Services Directorate



Mr. Sher Singh Bhat
Deputy Managing Director
Generation Directorate



Mr. Sunil Kumar Dhungel
Deputy Managing Director
(On Deputation to Tanahu Hydropower Ltd.)



Mrs. Gosai K.C.
Deputy Managing Director
Administration Directorate



Mr. Kanhaiya Kumar Manandhar
Deputy Managing Director
Transmission Directorate



Mr. Surendra Rajbhandari
Deputy Managing Director
Project Management Directorate



Mr. Rajiv Sharma
Acting Deputy Managing Director
Planning, Monitoring & IT Directorate



Mr. Lila Nath Bhattarai
Acting Deputy Managing Director
Engineering Services Directorate



Mr. Lekha Nath Koirala
Acting Deputy Managing Director
Finance Directorate

Managing Director's Report

I am privileged to present this annual report on the activities of Nepal Electricity Authority (NEA) for the fiscal year 2014/15 on the occasion of 30th year of its dedication in the service of our nation. On this occasion, I would like to take this opportunity to affirm our commitment to perform better and deliver better results in the days to come.

At this moment, before my submission of activities and performance of NEA for the fiscal year 2014/15, I pay my sincere tribute to all individuals who lost their lives during the devastating earthquake this year. With this note, I now present my report on the activities of NEA during past fiscal year 2014/15.



Operational Performance

Our endeavors to maximize the utilization of available resources including import from Indian short term market could not offset the imbalance between demand and supply and we were compelled to enforce unpleasant load shedding with a little satisfaction that we were able to reduce the load shedding compared to maximum 12 hours per day of preceding year. Combination of expected normal imbalance and natural contingencies aggravated the mismatch between demand and supply to this level. NEA as single buyer cannot be solely held responsible for this severe mismatch of demand and supply but had to absorb and dissipate the mounting pressure of dissatisfaction of consumers. As NEA is not the only player in the sector, I cannot promise a magical change in such situation although we will intensify our efforts through our strategic options to minimize the crisis. It is high time and I request the government to extend its arms to help NEA in this regard.

The annual peak power demand of the Integrated Nepal Power System (INPS) in fiscal year 2014/15 was 1,291.80 MW, with 585 MW load shedding. Out of the power actually supplied, 357.68 MW was contributed by NEA hydro, 124.71 MW by IPP hydro and the rest 224.41 MW was imported from India. Compared to the preceding fiscal year's figure of 1201 MW, the annual peak power demand of the INPS registered a growth rate of 7.56 %. Considering supply options available, we had predicted resorting to a maximum of 12 hours of daily load shedding during the driest months of January, February, March and April. However, we succeeded in restricting the daily load shedding to maximum 11 hours. This was possible due to efficient operation of the power system, filling up of the Kulekhani reservoir at the onset of the dry season, and also comparatively a wet monsoon. Extended load shedding hours for the

feeders that reported high percentage of theft was also a contributing factor. NEA resorted to all possible means to minimize load shedding including purchase of all excess energy from the IPPs, operation of costly diesel plants and all possible import under power exchange agreement and power trade with India. Till the supply capability of NEA power system is substantially improved, I sincerely request our consumers to understand that load shedding is NEA's compulsion.

Total energy sales including sales to India was 3,743.75 GWh in the fiscal year 2014/15. This is a growth by 7.08 % in the sales figure of fiscal year 2013/14. Sales to India, however, declined to 3.21 GWh from 3.4 GWh in fiscal year 2013/14. NEA's system loss decreased by 0.81 percentage from the audited loss figure of 24.64% in fiscal year 2013/14 to 24.44 % (provisional) in fiscal year 2014/15. We are committed to intensify our efforts to bring down the system loss to a technically acceptable level. For this, support from the political parties, civil societies and the general public will also be solicited. The total number of consumers at the end of fiscal year 2014/15 grew by 5.75 % and reached 2.87 million at the end of fiscal year 2014/15. Out of the total number of consumers; domestic, industrial and other remaining consumer categories accounted for 94.34%, 1.48% and 4.18% respectively. However, in terms of sales the corresponding shares are 44.78%, 36.31% and 18.92% of total sales.

Today I am proud to announce that NEA, as a great historic achievement, has been successful in solving the long-standing issue of 220 kV Khimti-Dhalkebar transmission line and the line construction work in the public-obstructed area has already been resumed through understanding with the local people.

In the past FY 2014/15, our nation had to face a severe earthquake and its continuous heavy aftershocks

which devastated central and western Nepal with high casualties and heavy losses. Even in such tragic and difficult times, I am proud to announce that, NEA with the support of all, proved to act timely and efficiently in restoration of the power system, which was appreciated by all.

Financial Performance

In spite of encouraging figures on demand side, NEA could not cash the opportunity so created by converting the potential demand into revenue due to lack of supply sources. NEA's financial performance did not remain up to the level of expectation. NEA incurred a net loss of Rs 6,510.04 million in FY 2014/15. Accumulated losses at the end of FY 2014/15 reached Rs 26,798.62 million. NEA earned total revenue of Rs 32,568.87 million during 2014/15, of which Rs 30,483.46 million came from the main business, i.e., sale of electricity which is 5.89% increase over last year's figure of Rs 28,787.21 million. Similarly, NEA earned Rs 2,085.41 million under 'other incomes'.

Moreover, FY 2014/15 was recorded as below average from the point of view of dry season run-off discharge in the rivers, which ultimately reduced electricity generation below expectation. High cost of service contributed by increased internal purchase at relatively higher tariff at generation point, annual escalation on purchase tariff, operation of thermal plants, import of high cost seasonal energy from India, regular import at relatively higher price, increased staff cost, increased maintenance cost and hike in prices of fuel and other commodities could not be responded by proportionate increase in volume of business and prevailing retail tariff. Our average price of electricity was Rs 8.14. NEA's liability towards Government of Nepal by the end of year 2014/15 has reached Rs 49,631.95 million as share capital and Rs 94,041.38 million as secured long term loan. Similarly, by the end of FY 2014/15, NEA's net property as plant and equipment at historical cost reached Rs 84,368.67 million whereas Rs 59,070.79 million was recorded as expenditure in capital work in progress. NEA has also invested Rs 16,539.30 million as equity shares in various subsidiary companies.

Development Activities

NEA's electricity supply position is far from satisfactory to meet the ever increasing demand, thus compelling NEA to resort to heavy load shedding. To overcome this imbalance of supply over demand, as well as to keep pace with the annual demand growth presently averaging at 7.56%, NEA is undertaking the construction of a number of hydropower projects. Furthermore, some hydropower plants are being developed through NEA's subsidiary and associate companies. The private sector

also has a large role to contribute. To add to it, extension of the transmission grid and the distribution network is also NEA's responsibility.

Construction of Kulekhani-III Hydroelectric Project is in progress. The 14 MW Kulekhani III Hydroelectric Project is a third cascade scheme of the Kulekhani Reservoir project. Approximately 92% of the civil construction work and 45% of electro-mechanical installation works have already been completed. As per the MoU, the project duration has been extended by 30 months from the original 44 months. NEA Board has approved the new completion date for the Civil Contractor up to October 15, 2015. All of the civil structure in the Headworks area is complete except the control room. It is targeted to generate energy from Kulekhani III within the FY 2072/2073. This project will generate regulated energy which is most needed for the power system of Nepal.

Chameliya Hydroelectric Project constructed under joint funding of GoN, NEA and Korean loan was started in 2007 and is scheduled to be completed by March 2016. The site is located at Sikhar VDC, Ward No. 4, Balanch of Darchula District. The plant capacity is 30 MW with average annual energy generation of 184.21 GWh. Even with numerous problems, the project has achieved 94% progress so far. The headrace tunnel encountered the squeezing problem of maximum 40% (in diameter) for a length of 843.00 m. The treatment for this squeezing has been completed in 615 m stretch. Another major problem faced by the project has been the excessive weak geological condition in the vertical shaft penstock forming the cavity with debris flow. The progress of Vertical shaft is 36 m out of 72 m. This project will provide power in the far western Nepal and will enhance economic development in the region.

Rahughat Hydroelectric Project with a capacity of 32 MW is located in Galeshwor, near Beni, Myagdi District in Dhaulagiri Zone of Western Nepal. In this project, most of the land necessary for construction of the Project has already been acquired. Similarly the permission for cutting trees has also been acquired. After the Termination of the Contract with the Contractor, NEA is reviewing its further execution plan. The detail design of the structures, estimation of quantities, rate analysis, preparation of tender drawings and preparation of tender documents are being undertaken at this moment. An understanding was reached to complete this phase of the work within three months, and Minutes of Meeting for the same was signed with the Consultant WAPCOS Limited on 15th July, 2015. The design work has already been started from 26th July, 2015 and the capacity has been optimized at 40 MW. The re-design of the structures, for the new discharge and installed capacity, has already started. The notice for fresh tender will be issued by November 2015 and the new contractor is expected to be appointed by June 2016. The Project is scheduled to be completed by June 2020.

Upper Trishuli-3A Hydroelectric Project (UT-3A HEP) is a run of river project with an installed capacity of 60 MW. The project is located in Rasuwa and Nuwakot districts of Bagmati zone with the head works located at Salletar 20 km north of Trishuli bazaar. Following the earthquake of 25th April 2015 and 12th May 2015, the access road to the project site, 11 kV transmission line to the headworks and many construction equipment have been heavily damaged. Due to the influence of the earthquake, contractor has retreated all Chinese labor back to China and dismissed all local labors. Although the access road to Powerhouse has been opened, the access road to surge shaft and headworks are still to be cleared. A high level team shall be mobilized for detail assessment of the damage due to the impact of earthquake at project site, which will perform safety inspection of the project. Resumption of the construction work shall take place after considering the recommendation of such high level team.

To prepare promising hydropower projects for their implementation, study ranging from desk study to feasibility study level has been carried out on number of hydropower projects. Noteworthy among them is the Dudhkoshi Storage Hydroelectric Project. The process for selecting an international consultant for implementing the Dudhkoshi Storage Hydroelectric Project is in progress. The consultant will upgrade the existing feasibility study, carry out detail design and prepare tender documents. Other projects that are under active consideration for implementation are Tamakoshi V (87 MW) and Upper Modi 'A' (42 MW) together with its cascade Upper Modi (18.2 MW).

The power generated from Maikhola (22 MW) has been partially evacuated by 33 kV line through Godak substation, Ilam. Also, in the Kabeli Corridor, Damak 132 kV substation has been commissioned and Damak-Ilam section transmission line is nearing completion. Numbers of other transmission line projects are also planned for implementation. Some are under project preparatory stage undergoing various studies. Similarly, a number of electrification projects, distribution substation construction and upgrading projects and 33 kV transmission line and substation projects are underway throughout the country to increase the accessibility of electricity to the rural population.

A new Project Management Directorate (PMD) has been established in the Nepal Electricity Authority Organogram to facilitate projects funded by Asian Development Bank. It is responsible for preparation, procurement and construction of all new ADB projects starting with SASEC- Power System Expansion Project (RRP NEP 44219). In addition, PMD continues to coordinate, monitor and report the implementation activities of the projects that are being executed under Energy Access and Efficiency Improvement Project (ADB Loan 2587,

Grant 0182 and Grant 0183), Electricity Transmission Expansion and Supply Improvement Project (ADB Loan 2808, Grant 0270 and Grant 0271) and Project Preparatory Facility for Energy (PPFE).

NEA's Subsidiary Companies and the Private Participation

Chilime Hydropower Company Limited (CHPCL), the first subsidiary company of NEA, has been successfully delivering deemed as well as excess energy to NEA from its Chilime Hydroelectric Power Plant. CHPCL is undertaking the development of Upper Sanjen (14.6 MW), Sanjen (42.5 MW), Rasuwagadhi (111MW) and Middle Bhotekoshi (102 MW) Hydroelectric Projects. Similarly, Upper Trishuli -3B Hydroelectric Company has been established in equity partnership with Nepal Telecom for the development of Upper Trishuli -3B Hydroelectric Project. Power Transmission Company of Nepal (PTCN), a transmission business subsidiary, is engaged in development of Dhalkebar – Muzaffarpur 400 kV cross border power transmission line. NEA has always considered IPPs as trusted peers in meeting country's growing demand for electricity. During FY 2014/15, 23 new PPAs with combined capacity of 442.406 MW were concluded. With this, the total number of PPAs concluded so far till FY 2014/15 has reached 160 with combined capacity of 2,356.63 MW. Power in the quantum from 15 to 35 MW was imported under a short term PPA with Power Trading Corporation of India (PTC) Ltd. from Tanakpur point at 132 kV level in the Fiscal Year 2014/15. Besides, a long term Power Sale Agreement (PSA) has already been signed with PTC, India for the import of 150 MW power for 25 years through 400 kV Dhalkebar-Mujaffarpur transmission line.

A total of 6 new projects developed by the Independent Power Producers (IPPs) with their combined capacity of 42.12 MW were commissioned in the FY 2014/15. Projects that were commissioned are: Upper Puwa Khola-1 (3 MW), Jiri Khola (2.2 MW), Mai Khola (22 MW), Upper Hugdi Khola (5 MW), Andi Khola after upgrading (9.4 MW) and Belkhu (0.52 KW). With these 6 projects, the total number of IPP-owned projects that are in operation has reached 44 with their combined installed capacity of 292.82 MW. Similarly, 83 projects of IPPs with combined capacity of 1,521.28 MW are under construction. Likewise, 33 projects of IPPs with combined capacity of 542.53 MW are in other stages of development.

The Way Forward

Purchase energy price escalates every year, but NEA cannot incorporate this escalation in its retail tariff

resulting in widening gap between cost of service and revenue return rate. Thus, NEA is compelled to operate the business in direct loss. I admit that there is scope for improvement in NEA's operation, but it will not be significant to improve the crippling health of NEA. Revision in tariff is essential for recovering past losses; whereas a permanent solution would be to implement an automatic annual tariff revision contingent to consumer price index to make NEA sustainable. NEA cannot bring down the energy purchase price, but it commits to take effective initiatives to improve its own generation, transmission and distribution costs. NEA shall be least involved in developing small size ROR projects, as private sector is capable of doing that. NEA has targeted regional storage projects, firm power import for certain time and export of wet season surplus. These initiatives will ensure dry season supply.

Further, NEA's current huge shortfall of supply over demand cannot be removed outright and is bound to remain for the next few years. NEA will improve the quality of its services through the use of new technologies to meet the challenges of new environment of utility business.

Moreover, we have strategic plans to expand our generation, transmission and distribution capacity, curb the system losses and improve financial health. To improve the cash flow situation we will impose strong financial discipline to reduce the costs of operations as well as increase the revenue through efficient operations, reduction of system losses and additional income from mobilization of available resources. However, consistent proactive efforts shall be made for revision of retail tariff and financial restructuring.

In addition, the projects under construction by IPPs and projects for which PPAs have been signed are run-of-river type only. These projects generate lot of energy during wet season and considerably less quantity during dry season. This results in surplus during wet season and deficit during dry season. A concrete and comprehensive plan is required to utilize this surplus energy and to manage the deficit in dry season. In this regard, completion of Muzaffarpur – Dhalkebar 400 kV Cross Border Transmission Line and trading with India will constitute viable and immediate option whereas development of storage projects will provide a long term solution to resolve this problem.

Also, centralized customer care center shall be established to ensure all consumer-related activities, timely service, and grievance handling. NEA will also implement Automatic Meter Reading system and internet-facilitated billing system.

Furthermore, capacity building of NEA will be a key agenda, for which the Training Center will be institutionally restructured. The project resources will be pooled to fund the capacity development program in

a comprehensive manner with due mechanisms put in place for Training Needs Assessment (TNA) and planned training activities. The idea is to develop Training Center as a Center of Excellence for HR development in the power sector.

To conclude, we firmly believe that ensuring human touch in our service delivery and improving moral health of our organization will definitely improve our image and open new avenues for financial resources mobilization in the years to come.

Acknowledgements:

I take this opportunity to acknowledge that credit for NEA's performance and achievements attained during 2014/15 goes to all those who have been directly or indirectly contributing to this cause. I want to express my deep gratitude to Honorable Minister of Energy for her active leadership in boosting the morale and providing regular encouragement. Our deep gratitude also goes to members of NEA Board of Directors who have steered the course in all adverse conditions. Thanks are also due to the donor community that has made it possible for NEA to undertake the works for its development. I am thankful to the entire staff of NEA and their representative trade unions for their support and cooperation to the management. Most importantly, I wish to thank our valued consumers for bearing with us during periods of difficulty and assure them that we are in constant pursuit for providing electrical supply that is reliable and adequate for their needs.

I would like to thank the complete NEA team involved in the post-earthquake power system restoration works which were carried out in adverse and challenging ground conditions.

I sincerely acknowledge that concerned parliamentary committees and government showed great concern on the financial health of NEA and extended support in our regular operation and development pursuits.

At last but not the least, I am indebted to our valued consumers for bearing with us during adversities.

Thank You.



Managing Director
Mukesh Raj Kafle

Generation Directorate

Generation Directorate, headed by Deputy Managing Director is responsible for construction of new power projects together with operation and maintenance of NEA owned power stations. The main objective of this Directorate is construct new projects owned by NEA and smooth operation and maintenance of existing power plants with optimal use of resources. The Directorate is supported by four departments, namely Generation Development Department(GDD), Technical Support Department, (TSD) Large Generation Operation and Maintenance Department(LGO&MD), Medium Generation Operation and Maintenance Department(MGO&MD) each headed by Director. It is supported by three divisions/sections namely, Finance, Administration and Monitoring and IT. At present, this Directorate is taking care of construction of the following four hydropower projects.

- Kulekhani III Hydroelectric Project(14MW)
- Chameliya Hydroelectric Project (30MW)
- Raughat Hydroelectric Project(32 MW)
- Upper Trishuli 3'A' Hydroelectric Project(60MW)

Chameliya Hydroelectric Project, Raughat Hydroelectric Project and Upper Trishuli 3'A' Hydroelectric Project are headed by respective Project Directors and report to the Deputy Managing Director. Whereas, Kulekhani III Hydroelectric Project is headed by Project Manager and reports to the Director, GDD. The TSD provides technical support needed for the ongoing projects and existing power plants on coordination with respective Directors.LGO&MD is responsible for five (5) hydropower and one (1) thermal plant above 30MW installed capacity owned by NEA. Similarly MGO&MD is responsible for twelve 12 hydropower and one (1) diesel plant which are below 30MW installed capacity owned by NEA.

Various activities and features of four hydropower projects under construction, LGO&MD, MGO&MD and TSD are during the FY are described as following.

KULEKHANI III HYDROELECTRIC PROJECT Project Background

The 14 MW Kulekhani III Hydroelectric Project is a third cascade scheme of the Kulekhani Reservoir project. The Civil works contract was awarded to Sinohydro



Corporation, China and the Electromechanical Contract was awarded to M/S Zhejiang Jinlun Electromechanic Co., China. By the end of FY 2071/072. approximately 92% of the civil construction work and 45% of electro-mechanical installation works have already been completed. Power generated from the Project will be

evacuated through a 500m long 132 kV transmission line. Government of Nepal and Nepal Electricity Authority (NEA) are funding the construction of this project. The initial total estimated cost of the project was NRs. 2.43 billion and scheduled to be completed by December 7, 2011. The construction works was halted by the Civil Contractor citing various problems. Re-negotiations were held with the Contractor and a "Memorandum of Agreement" (MoA) was signed on February 18, 2012 and subsequently the construction of the project was resumed from March 23, 2012. The main construction components of the Project are Civil Works (Lot C-1) and Electromechanical and Hydromechanical Works



(Lot-2). As per the MoA, the project duration has been extended by 30 months from the original 44 months. NEA Board has approved new completion date for the Civil Contractor up to October 15, 2015.

The original contract agreement with the consultant (Joint Venture of Water Resources Consult (P.) Ltd, SILT Consultants (P.) Ltd. and Hydro Engineering & Development Co. (P.) Ltd. for the Construction Management and Construction Supervision Work was terminated due to efficiency. The current Consultant for the Project is Water and Power Consultancy Services, (WAPCOS) Ltd. India, in association with Total Management System (TMS), Nepal.

Project Status

All of the Civil structures in the Headworks area is completed except the control room. The excavation



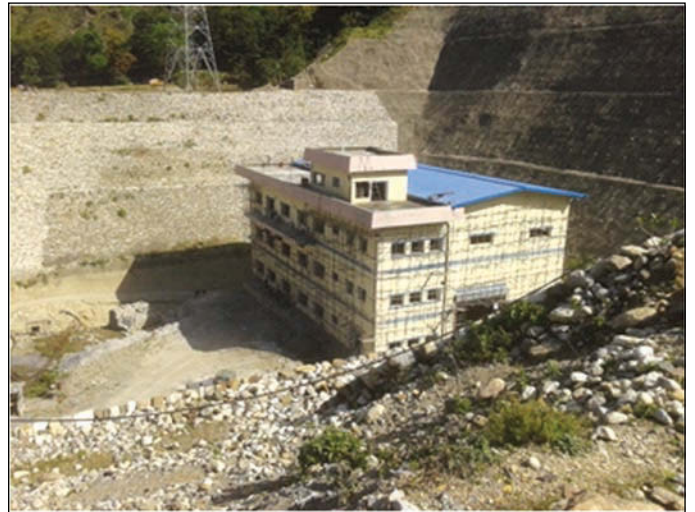
and concrete lining of the overall tunnel is completed. Installation of horizontal penstock including concrete lining is ongoing, out of 254m, installation of 80m of horizontal penstock and bifurcation is completed. In powerhouse, 35/5 ton EoT crane, spiral casing installation of both unit 1 and 2 is completed. Approximately 80% of the Electromechanical equipment has arrived at the site. It is targeted to generate energy from Kulekhani III within the FY 2072/2073. This project will generate the regulated energy which is most needed for the power system of Nepal.

Chameliya Hydroelectric Project

Chameliya Hydroelectric Project under joint funding of GoN, NEA and Korean loan was started in 2007 and is scheduled to be completed in March 2016. The site is located at Sikhar VDC, Ward No. 4, Balanch of Darchula District. The plant capacity is 30 MW with average annual energy generation of 184.21 GWh. Even with numerous problems, the project has achieved 94% progress so far.

Towards civil works, 99.8% of the dam construction works has been completed. Similarly, 99.1 % of intake, 100% of connecting tunnel, 100% of desanding basin, 94.1% of adit tunnel and 99.1% of the headrace tunnel (excluding squeezing portion) has been completed. The progress of power house, surge tank, penstock and tail race construction stands at 99.9%, 70.6%, 63% and 99.8% respectively.

The headrace tunnel encountered the squeezing problem of maximum 40% (in diameter) for a length of 843.00m



.The treatment for this squeezing has been completed in 615m stretch. Another major problem faced by the project has been the excessive weak geological condition in the vertical shaft penstock forming the cavity with debris flow. The progress of Vertical shaft is 36 m out of 72m.



The embedded parts for powerhouse have been installed. Installation of two draft tubes with all accessories has been completed. Similarly installation of turbines has also been completed. Most of hydro-mechanical and

electro-mechanical equipment are delivered to site. All of tower foundation works and tower erection works of 132 kV transmission line works have been completed. 122.2 km out of 131 km stringing works have been completed . So far 92.2 percent of total electromechanical/hydro mechanical/transmission line works has been completed. A total expense of project till now is Rs. 12.5 billion. This project will provide power in the far western Nepal and will enhance economic development in the region.

RAHUGHAT HYDROELECTRIC PROJECT Project Background

Rahughat Hydroelectric Project with a capacity of 32 MW is located in Galeshwor, near Beni, Myagdi District in Dhaulagiri Zone of Western Nepal.

The fund required for the construction of the project was estimated to be US\$ 67 million. Out of US\$ 67 million, US\$ 31 million was made available from EXIM Bank of India under US\$ 100 million Dollar Line of Credit Agreement dated 14th September, 2007 for the



civil works and Consultancy services for civil works. The remaining fund of US\$ 36 million required for electro-mechanical, hydro-mechanical, transmission line and main civil works was made available from EXIM Bank of India under US\$ 250 million Dollar Line of Credit Agreement dated 21st October, 2011. The approval of US\$ 36 million Credit Line for the project was conveyed by the Embassy of India, Kathmandu on 3rd June, 2013. Contract Agreement for the construction of the Main Civil Works (dam, intake structure, de-sander, headrace tunnel, surge tank, penstock, power house, tail race, access road etc) was signed on 4th November 2010 with IVRCL Limited, India. The duration of the contract period, after the issuance of "Notice to Proceed", was 42 months. As per Contract Agreement, the construction of the access road, bridge and the Contractor's temporary facilities were to have started immediately after signing of the Contract and the rest of the works were to commence after the issuance of the Work Order from

the Consultant.

Contract Agreement for the Consultancy Services for Construction of Main Civil Works was signed with WAPCOS Ltd. (A Govt. of India Undertaking) in association with TATA CONSULTING ENGINEERS LIMITED AND LARSON & TOUBRO LIMITED on 16th February, 2012 and the concurrence was received from the EXIM Bank of India on 2nd August, 2012.

The EXIM Bank of India gave approval for the appointment of WAPCOS Limited, consultant for the construction of main civil works of the project, as consultant also for Electro-mechanical, Hydro-mechanical and Transmission Line (EM, HM and TL) works. A Supplementary Contract was signed with WAPCOS Limited for the Consultancy Services of EM, HM and TL works on 24th March, 2014. The Contractor could not take up the construction work even after repeated instructions and understandings made because of the very poor financial condition of the company. The Consultant issued a "Notice to Correct" to the Contractor with the hope that the Contractor would expedite the work. Instead, the Contractor filed cases against the Employer, at the Lalitpur Appellate Court seeking stay orders to prevent the Employer from terminating the Contract and seizing the bank guarantees. The Court rejected to issue the stay orders. The Employer issued "Notice for Termination" to the Contractor on 18th June, 2015. As the Court rejected the plea of the Contractor to issue stay orders, the Employer seized the Bank Guarantees on 28 June, 2015. The contractor IVRCL has now initiated the arbitration process under UNCITRAL rules of Arbitration as per the Condition of Contract.

The Construction of the Camp Facilities being undertaken by Gorkha Swachchanda JV has also entered into



the disputes and the contractor has already initiated arbitration proceedings at NEPCA.. The case is still under

consideration at NEPCA..

The Construction of Infrastructures for Camp Facilities being undertaken by Lama Construction has not been completed yet.

Project Status

Most of the land necessary for the construction of the Project has already been acquired. Similarly the permission for cutting trees has also been acquired.

After the Termination of the Contract with the Contractor, the Project has decided to optimize the capacity and remodel the framework for Project management and contract planning.

The hydrological study was revised and the new design discharge of 16.67cumecs was fixed. The detail design of the structures, estimation of quantities, rate analysis, preparation of Tender Drawings and preparation of Tender Documents are being undertaken at this moment. An understanding was reached to complete this phase of the work within three months, and Minutes of Meeting for the same was signed with the Consultant WAPCOS Limited on 15th July, 2015.

The design work has already been started from 26th July, 2015 and the capacity has been optimized to 40 MW. The re-design of the structures, for the new discharge and installed capacity, has already started. The experts from WAPCOS Limited have started arriving and more experts are scheduled to arrive according to the approved manning schedule.

The notice for fresh Tender will be issued by November 2015 and the new contractor is expected to be appointed by June 2016. The Project is scheduled to be completed by June 2020.

UPPER TRISHULI 3A HYDROELECTRIC PROJECT

Project Background

Upper Trishuli-3A Hydroelectric Project (UT3AHEP) is a run of river project with an installed capacity of 60 MW. The project is located in Rasuwa and Nuwakot districts of Bagmati zone with the head works located at Salletar



20 km north of Trishuli bazaar. The construction of this project was initiated in FY 2010/11. This project is under implementation with financing from China Exim Bank, Government of Nepal & Nepal Electricity Authority. An agreement was signed between the Government of Nepal and China Exim Bank for a concessional loan of 120 million US Dollars. The estimated cost of the project is 125.775 Million US\$ and the loan from China Exim Bank is expected to cover the cost of the major project works including Civil, Electro-Mechanical, Hydro-Mechanical and Transmission Line works.

Project Status

Contract for the major construction work (Civil, electro-mechanical & hydro-mechanical works) was signed on 28 May 2010 with China Gezhouba Group Company Ltd., China (CGGC) at a cost of 89.1779 Million US\$. The Contract has become effective since 1 June 2011 and the construction work going on since then.

Contract for construction supervision of the project has been signed with Northwest Hydro Consulting Engineers, China (NWH) on September 2010. The supervision work had also started since 1st June 2011.



Land acquisition for the major Project work has been basically completed including leasing of land for the temporary facilities.

CGGC has completed construction of steel bridge and a pedestrian bridge over Trishuli River, temporary camp at headworks, excavation of 127.5m long adit no.1, 134.5m long adit no.2, 234.6 m long adit no.3 and 109.32m long adit no.4. At headworks, CGGC has completed first phase of river diversion with installation of 2 numbers Gates, construction of Intake works and 106 m of approach channel. Second stage River diversion work was commenced on February 8, 2014. Cable tunnel and access tunnel for underground powerhouse are already completed. Excavation of

underground powerhouse cavern excavation, upper and lower drainage tunnel, switch yard and tailrace tunnel has been completed. About 95% of headworks (Intake, weir, stilling basin and gravel trap) concreting work has been completed. About 97% of desander concreting work has also been completed. Excavation of 3867 m out of 4076 m long headrace tunnel (~95%) has been completed together with. About 23% of Concrete lining in the headrace tunnel. Excavation work of vertical and horizontal pressure shaft and about 57% of excavation of surge shaft has been completed. Concreting of draft tube unit-1 & 2 and upper conical part of unit 1 has been completed. Concreting of crane beam and crane installation has been completed. About 33% of concrete lining in the tailrace tunnel has been completed. About 35% of steel lining in penstock branch pipe has been completed.

The Transmission line comprises of 44.7 km long 220 kV line from powerhouse switchyard to Matatirtha substation in Kathmandu. In addition about 1 km of 220 kV underground cable route leads to the Matatirtha Substation and two 132 kV line bay extension works will be done for interconnection with existing Matatirtha substation.

Contract for the Transmission line work was awarded to



China International Water & Energy Corporation (CWE) at a contract price of 22.6 million US\$ excluding VAT. The Contract for the transmission line has become effective from 26 February 2012 after the loan agreement between GoN and China Exim Bank was signed on 17 August 2011.

400 km ACSR 'BISON' Conductor and Anchor Bolt for tower foundations have already arrived at the site. 132 kV Line bay equipment is ready for dispatch to the site from China. Land acquisition for tower foundation has also been completed and approval for tree cutting has been obtained from the relevant district forest offices. Tree-cutting works has been completed for 6 out of 26 community forest. Till date 34 tower foundation

concrete work has been completed and other 10 are on progress.

The project has conducted skill enhancement training to 60 persons from the which include four school buildings, two water supply systems, upgrading of road from Trishuli to Champani, road improvement to Trishuli hospital, Supply of hospital equipment, Irrigation drain works and pedestrian trail, various village roads in project-affected areas. through under Public Support Program.

Aftermath of the earthquake of 25 April 2015 and 12 May 2015, the access road to the project site, 11 kV transmission line to the headworks and many construction equipment have been heavily damaged. Due to the influence of the earthquake, Contractor has retreated all Chinese labor back to China and dismissed all local labors. Although the access road to Powerhouse has been opened, the access road to surge shaft and headworks are still to be cleared. A high level team shall be mobilized for detail assessment of the damage due to the impact of earthquake project site, which will perform Safety Inspection of the project. Resumption of the construction work shall take place after considering the recommendation of such high level team.

LARGE GENERATION OPERATION & MAINTENANCE DEPARTMENT

This Department overlooks the operation and maintenance of five (5) hydropower stations and one (1) thermal power plant above 30 MW owned by NEA, with a total of 414.90 MW of installed capacity. Kaligandaki 'A' and Middle Marsyangdi Hydropower Stations have made record generation this year exceeding all previous years generation. The generations of the power plants have been very satisfactory excluding the Multi-fuel power plant which is not in operation since Ashad 2071 due to disruption of supply of oil from Nepal Oil Corporation.

Overhauling of generating units is regularly carried out in the lean season in order to minimize energy loss. Apart from preventive and corrective maintenance works, periodic overhauls were carried out in Kaligandaki A, Middle Marsyangdi and Marsyangdi power plants. Kulekhani-I and Kulekhani-II being reservoir type power plants does not experience erosion problems and hence, only regular preventive maintenance activities were carried out. Emergency maintenance of Unit No. 2 of Middle Marsyangdi was carried out during the period of Plant shutdown. Under this department, Kali Gandaki A Hydropower Plant Rehabilitation Project (KGAHPPRP) under loan financing from International Development Association (IDA) and Modernization of excitation system of Marsyangdi Hydropower station jointly financed by ADB and GoN under EAEIP are under

implementation.

The following sections provide a concise description of the power stations and highlight major activities carried out under this department during the fiscal year.

Kaligandaki 'A' Hydropower Station

Kaligandaki 'A' Hydropower Station is the largest Power Plant of Nepal with installed capacity of 144 MW and annual design generation of 842 GWh. It is located at Krishna Gandaki, Syangja. It has the highest generation 929.983 GWh this year since commissioning in 2002 which is 7.62% more than previous year's generation. The significant maintenance works this year includes overhauling of Unit No. 3 from 1 March 2015 to 20 April 2015, under which repair and replacement of HVOF coated runner, wicket gates, wearing rings, facing plates were carried out. Other activities include power transformer oil filtration, excitation transformer and power transformer cleaning generator stator and rotor cleaning and checking of instrumentation & control system. Replacement of Potential Transformer and replacement of SF6 gas at the substation were



also carried out this year. Other major works include installation of 1100 AH, 110 V new battery bank at powerhouse and installation, testing and commissioning of DC/DC convertor. Moreover, repair and maintenance works of diversion gates, under sluice gates, desander flushing gates were carried out.

As part of implementation of KGA Hydropower Plant Rehabilitation Project (KGAHPPRP), the Contract Agreement for the Consulting Services for Dam Safety, Civil, Electromechanical Works and Capacity Building have been signed between NEA and MWH International Inc, USA on 23rd April 2015 under Technical Assistance and Capacity-Building component. Under Electro-Mechanical Works, Contract Agreement for Supply and delivery of Turbine spare parts & Repair of Turbine have been signed and repair portion

of the contract has been completed. Contract packages for Supply and delivery of Spare Parts for Power House Auxiliary System (Lot 1, 3, 4 & 5) have been signed & delivery is almost completed. The other competitive packages consisting of Spare Parts for Power House Auxiliary System (Lot 2, 6 & 8) and Installation of Trash Rack Cleaning Machine are under evaluation. Under Safeguard Implementation, Maintenance works on Seti Beni Sheela, construction and improvement works of Fish Hatchery & improvement of Irrigation System and water supply in Beltari has been signed. Civil Works, repairing and upgrading of Control system, Safeguard Implementation, Capacity-Building and Catchment Area Treatment Plan are planned for next fiscal year after the detail review from the Consultant.

2. Middle Marsyangdi Hydropower Station

Middle Marsyangdi Hydropower Station with installed capacity of 70 MW and annual design generation of 398 GWh is located at Bhotedar, Siundibar, Lamjung. It was commissioned in 2008. It has consistently performed well thereby generating 457.318 GWh this year exceeding all previous years generations since its commissioning. Its outstanding operational performance is rightly supported by periodic overhauling of Units. Overhauling of Unit No. 1 was carried out this year starting from 19 March, 2015 and completed on 21 April, 2015 which included mainly the replacement of the runner, replacement of wicket gate lower and upper bush along with the maintenance of control panels, generators, transformers, switchyard equipments, sensors etc. Dam site Reservoir Left bank Rip-Rap and Gabion Wall protection works were carried out this year in 15 days of Plant Shutdown. Emergency maintenance of turbine parts of Unit No.2 and maintenance of service gate at dam site were also carried out during the same



period. A 12.5 MVA Power Transformer brought from Dhalkebar was installed at MMHPS transformer bay which allowed the local IPP generation to be connected to 132 KV and also the problem of frequent power

outages at Head Works while taking power from Udipur Substation were eliminated after the installation of this transformer. Automatic operation of Desander is now possible after the replacement of calibrated sensor at the desander nos. 3&2 flushing gate. Primary Controller of Unit No. 2 has been restored(Under the existing service contract with ALSTOM) thereby ensuring safety against redundancy and running hour of Unit No. 1 and Unit No.2 were also adjusted as per actual.

Marsyangdi Hydropower Station

Marsyangdi Hydropower Station is located at Aabookhaireni, Tanahun in the central region with installed capacity of 69 MW and annual design generation of 462.5 GWh. It was commissioned in 1989 AD. This year it generated 472.981 GWh of energy which is 2.45% more than previous year's generation. Major works this year includes the Overhauling of Unit No.1 along with



replacement of runner, wearing ring and facing plates of turbine units. Refurbishment and servicing of 132 KV GIS breaker at the power station was carried out this year by Alstom Grid GmbH. Other major works this year include modernization of Unit 2 powerhouse elevator control system, installation, testing and commissioning of new 110 V Ni-Cd Battery Bank, Upgradation of LV Switchgear-400V ACB breaker, replacement of one set of air compressor of governor, repair of generator air coolers and bearing air coolers and repair of various parts of intake raking machine and hydraulic system. The modernization of excitation system jointly financed by ADB and GoN under EAEIP, Loan Number: 2587-NEP (SF) is under progress and planned to be completed by next year.

Kulekhani-I Hydropower Station

The 60MW Kulekhani-I Hydropower Station is the only seasonal storage type Plant in Nepal and annual design generation of 211 GWh (165 GWh primary and 46 GWh secondary). It was commissioned in 1982 AD and is located at Dhorsing, Makwanpur. The availability of this Plant is critical in INPS and so does with operation & maintenance. The plant was principally designed for

operation during dry season when potential capacities in other run of river schemes are seriously compromised. Major works this year consist of replacement of 66 KV Fuse link at primary side of 3MVA Power Transformer at switchyard along with installation of 66 KV SF6 Circuit Breaker and its Control and Relay Panel. Bottom and



side seal of Radial gate at Dam Site and Chakhel gate at Chakheldam were replaced this year. Replacement of cooling water pipelines and associated valves at power house, replacement of backup battery of Digital AVR/Governor panel of Unit No. 2 were also carried out this year. Major Civil repair works include maintenance of Road, and construction of water tank at Dhorsing.

Kulekhani-II Hydropower Station

Kulekhani II hydropower is a cascade power station of Kulekhani I hydropower with diversion of Mandu river and water lift system from Rapti river having 32MW installed capacity and annual design generation of 104.6 GWh. This plant is located at Bhainse VDC of Makawanpur district and was commissioned in 1986 AD.



Besides regular maintenance works ,major works carried out this year include the replacement 3 nos. of 132 KV

SF6 Circuit Breakers, construction of Gabion check wall at Mandu intake area to control the debris from upstream part and construction of coffer dam at Rapti intake which was damaged due to the flood occurred on rainy season.

Multi-Fuel Power Plant

Multifuel Power Plant with installed capacity of 39 MW is located at Bansbari, Morang in the eastern industrial corridor of Nepal. Out of total installed capacity of 39 MW, 26 MW capacities was put into service in fiscal year 1990/91 and additional 13 MW capacity was put into service in fiscal year 1997/98. It consists of 6 (Six)



Wartsila Diesel engines which use furnace oil (FO) as a source of energy. There are two machines each 7.5 MVA manufactured by Leroy Somer France and four machines each 8.144 MVA manufactured by Alstom, France. This plant was not in operation this year due to disruption of supply of oil from Nepal Oil Corporation. The major works this year include maintenance of 11 KV breakers, pump element and nozzle element replacement in unit No. 5, replacement of new pump in deep well No.3 besides regular scheduled maintenance works.

Medium Generation Operation and Maintenance Department

Medium Generation Operation and Maintenance Department (MGO&MD), headed by a Director, is responsible for the operation and maintenance of twelve (12) hydropower stations and one (1) diesel power plants with individual installed capacity below 30MW and owned by NEA with an objective to maximize energy generation by optimally utilizing generation resources while undertaking rehabilitation, periodic overhauling and maintenance of generating facilities. It has always strived to uphold economy, operational efficiency and an acceptable level of reliability in its drive for improvement. The installed capacity of 12 hydropower stations and 1 diesel power plant with installed capacity below 30 MW is 108.39MW. Most of the Power plants have met their target generation except Sunkoshi which was affected severely by land slide of July 2014 and earthquake of April 2015. Modikhola Hydropower Station now under

rehabilitation of headworks has generated 14.5% more energy than the yearly target. Trishuli Hydropower Station has put in operation its Unit No. 7 after 23 months. The mega earthquake of April 25, 2015 caused stoppage of generation in Sunkoshi, Trishuli and Devighat Power Station for few weeks/days due to severe damage on civil structures specially waterway. The reconstruction project with detail feasibility study will be planned for earthquake damaged structures. There are three major rehabilitation projects ongoing under this department which are Sundarikal, Tinau and Ganadak (TRCM). Rehabilitation is underway with loan assistance from the Asian Development Bank (ADB) under Energy Access and Efficiency Improvement Project (EAEIP).

The following sections provide a concise description of the power stations and highlight major activities carried out under this department during the fiscal year.

Trishuli Hydropower Station

Trishuli Hydropower Station is constructed on the banks of Trishuli River at Trishuli Bazar, Nuwakot. Initial installed capacity was 21 MW having 7 units of 3 MW each. It was commissioned in 1967 AD in assistance with the Government of India at a cost of INR 140 million. It was later rehabilitated in 1995 AD and upgraded to 24 MW with 6 units each 3.5 MW and one unit 3 MW. It is a peaking run-of-river plant with peaking capacity of 21 MW. The annual design generation is 163 GWh where as



its actual generation of this year is 124.76GWh. Major activities of this year include restoration of Unit No. 7 is in operation which was down due to problems in Auto Start/Stop Panel since 15 August, 2013. The unit no. 1 has also been restored which was badly damaged due to sudden firing on excitation system. Similarly other significant maintenance work this year includes overhauling of Unit No. 1 and 2 during the dry season. Installation of 6.6/11kV breaker, Governor Screw Pump in Unit No. 1. There were severe cracks on the left bank of the balancing reservoir and canal (water way) due to mega earthquake. It was immediately repaired and

resumed generation after 10 days. Most of the colony buildings are also badly damaged due to earthquake. Maintenance of flushing gates at headworks, building and water supply schemes on colony area, access road on office have been carried out. The desander and balancing reservoir need to be repaired for efficient operation.

Gandak Hydropower Station

Gandak Hydropower Plant is a canal drop low head plant located in Western Canal at Surajpura, Nawalparasi. This Canal with maximum discharge of 12,000 cusec advances further for irrigation in Uttar Pradesh, India. The Plant has three horizontal mounted tubular bulb turbine, low head high discharge Kaplan turbo-generators of 5 MW each with aggregate capacity of 15 MW and annual



design generation of 106.38 GWh. It was commissioned in 1979 AD in assistance with the Government of India. Operational performance of the Plant is deteriorating after rupture of coupling bolts of Unit No. 2 & 3 in July, 1999. Presently, Unit No. 1 and 2 are in shutdown condition due to damages on generator, stator and problems in PLC of Governor/Wicket gate servomotor from few years back. Currently Unit No. 3 is in operation but the generation is disrupted sometimes due to non synchronization and trip due to low grid voltage from Indian grid. The plant is also kept in shutdown two times a year for about 4 months regularly for main western canal maintenance. The plant is seeking rehabilitation, for optimum performance of the machine, under funding from GON/GOI

Devighat Hydropower Station

Devighat Hydropower Plant is a cascade development of Trishuli Hydropower Plant with installed capacity of 14.1 MW and annual design generation of 144 GWh. It is located at Devighat, Nuwakot and was commissioned in 1984 AD. Improved operational performance is observed after successful completion of rehabilitation in 2011. The

actual generation of this year is 97.74 GWh. Significant



works this year include replacement of 33/11 kV current transformer in the switch yard after the rupture has noticed. Installation of 110V-200Ahr Battery charger and battery bank in Sub Station control room has been completed. Similarly maintenance of office building, workshop building, retaining wall of power house, water supply works and access road of canal has finished. Other activities include protection of power canal at Samari Khola and store shed construction works has completed in this year. Procurement of E/M spare parts from OEM (BHEL) is also undergoing under finding from GON/GOI

Modikhola Hydropower Station

Modikhola Hydropower Station with installed capacity of 14.8 MW and annual design generation of 92.5 GWh is located at Dimuwa, Parbat. It was commissioned in 2000 AD. Operation of this Plant has been adversely affected especially during rainy season reportedly due to sub-optimal design and inadequate sediment handling facilities. The actual generation of this year is 58.95 GWh which is 14.7 percent more than its target generation.



Ongoing rehabilitation works at Headworks structure is expected to improve its performance more. Among rehabilitation activities, 70% of one of the two boulders and 30% of the other boulder located at upstream has been demolished to uniformly distribute high flood towards diversion weir and under sluice. Diversion weir rectification works which include replacement of plum concreting of downstream apron with RCC apron and construction of cutoff wall at the end has completed. The existing tilted right wing wall has been replaced with new RCC cantilever retaining wall. Installation bypass steel pipe system on the right bank of regulating pondage is in progress. In hydro-mechanical works, stop logs, under sluice gates repair and trash rack installation with new layout has been completed.

Major maintenance works carried this year include new installation of 110 VDC Battery at 33KV substation, CT at 132 kV transformers at switchyard and 62.5KVA diesel generator at intake. Replacement of inlet valves at Unit No. 2, replacement of cooling pipelines along with minor repair on guide vane, maintenance of 11 KV Intake feeder and replacement of water supply pipe lines has complete in this fiscal year. New transformer of 3MVA, 33/11kV is also installed at switchyard easing local distribution of the generated power to nearby affected VDC's.

Sunkoshi Hydropower Station

The 10.05 MW Sunkoshi Hydropower station, on the upper reach of Sunkoshi River is a run-of-river daily pondage power plant has an annual design generation of 70 GWh build with assistance from PRC in 1972. The Project cost was approximately NRs. 109.4 million including 66 kV single circuit transmission line up to Kathmandu. In July 2014, a huge landslide at Jure



occurred just 300m upstream of Sunkoshi headworks. Two of the gates and upstream retaining wall at headworks were severely damaged. The intake channel, desander were congested filled with debris. The Rehabilitation works was undertaken immediately and

started generation in March 2015. The mega earthquake in April 2015 caused further damages to the headworks power canal leading to generation outage. Most of the colony and office buildings are highly damaged. Reconstruction and rehabilitation works are in progress of procurement. The defects in electrical system were repaired. Treatment was made for the cracks in canal led to resumption of generation in July 2015. Similarly, other repair and maintenance such as testing of alignment of turbine, supply and delivery of barrage radial gates were carried out in this year. Major civil repair works to be done by contractors for the damages occurred due to Jure landslide is being disturbed currently due to consequences of recurrent earthquake and increased flow of river.

Ilam (Puwakhola) Hydropower Station

Puwa Khola Hydropower Station is a run of river type with installed capacity of 6.2 MW and annual design generation of 48 GWh. It is located at Golakharka, Ilam. It was commissioned in 1999 AD and was jointly developed by Government of Nepal and NEA at a cost of USD 15.7 million. It has two pelton turbines of 3.1 MW each and has generated 29.60 GWh of energy this year. Major repair and maintenance works this year include rectification of SF6 breaker, transformer leakage control and distribution transformer of head tank. The penstock which is laid over weak geology problem of



dislocation in a small portion which is being closely monitored. Landslides and heavy rain occurred during June/July 2015 has caused some damages on various civil components of the plant.

Chatara Hydropower Station

Chatara Hydropower Station, a canal drop type power station, is located at Chatara, Sunsari with installed capacity of 3.2 MW and annual design generation of 6 GWh. It was commissioned in 1996 AD with the assistance from Government of India at a cost of NRs. 162.6 million. The plant which was originally designed

to be a captive plant powering drazer pumps to flush sediments from the Canal was later handed over to NEA by Sunsari Morang Irrigation Project (SMIP) on 29 March, 1999. This year after repair of 3.5 MVA transformer from NEA Transformer Workshop in Hetauda was



installed properly. Similarly the repair and maintenance of governor oil pressure pump, Black start DG, Control panel power connector and blower system motor have been carried out. Replacement of 33 KV OCB breaker with SF6 breaker and Battery has been conducted. The inspection of turbine (for overhauling) has been done with plant shutdown. The minor repair and maintenance of power house, septic tank and office area has completed in this year. The major overhauling / rehabilitation of the power house is needed to resume power generation from this plant. OEM Andritz has submitted a proposal for rehabilitation and NEA is also seeking funds from GoN or GoI for the rehabilitation. Technical proposal is under review.

Panauti Hydropower Station

Panauti Hydropower Station built in 1965 with the Soviet assistance is located 35 km east of Kathmandu. The scheme was an installed capacity of 2.4 MW and annual design generation of 6.97 GWh. The Project was designed for operation of only two units at a time with third unit as a standby. Power canal of 3,721 m long with discharge of 3.2 cu. m/s from headwork to reservoir has seven (7) outlet gates for irrigation in the vicinity of Khopasi. Major repair and maintenance was carried out with guide vanes in turbine system,



11/33 KV transformer at Bhaktapur Sub- Station, and 33/6.3 and 6.3/11 KV transformer at Khopasi plant area. The procurement process of Unit-1 and Unit-2 machine governing system complete set, three unit protection and controlling system and AVR Excitation system at Khopasi Plant is ongoing. Currently Unit No. 2 is in operation and other two units are in shutdown condition due to repairing of their generators. Some minor maintenance under civil works such as guard house, office staff quarter and cleaning of reservoir has been completed in this year.

Seti Hydropower Station

Seti Hydropower Station is a run of river plant with installed capacity of 1.5 MW and design generation of 9.8 GWh. It consists of 3 units of 500KW each. It is located at Nadipur, Pokhara and was put into operation in 1985 AD with assistance from the People's Republic



of China. Power canal of this Plant serves both objectives of irrigation and energy. Intake of the canal is regulated primarily for irrigation by Department of Irrigation and hence, normal operation of the Plant sometimes gets affected regardless of availability of Units. Some of the works carried out this year include overhauling of Unit No. 1, temporary relocation of desander gate, repair of powerhouse slab, penstock painting works and access road to colony. This plant can generate in full capacity almost all days of the year and all units are in running condition.

Fewa Hydropower Station

Fewa Hydropower Station is a small 1.0 MW Plant built at the end of Fewa Canal in Pokhara. This Power Plant is located at the end of branch Canal at Pardi, Birauta, and Pokhara. It consists of 4 units each 250KW and annual design generation of 6.5 GWh. It was commissioned in 1969 AD with assistance from the Government of India. Presently, three units are in operation and Unit No. 4



is not in operation due to problem in generator turbine coupling. Some of the works completed in this fiscal year are maintenance of compound wall and overhauling of Unit No. 1. Minor repair of canal is also carried out.

Sundarijal Hydropower Station

Sundarijal Hydropower Station is located at Sundarijal, 15 km northeast of Kathmandu and serves twin purpose of water supply and energy. The tailwater discharge is utilized for water supply system to Kathmandu Valley whereas it has name plate combined turbine capacities of 1,300 BHP. This Plant was erected under Colombo Plan scheme whereby the main equipments were supplied by The English Electric Company Ltd., England. It was commissioned in 1934 AD, being second old hydropplant constructed in Nepal. Considering its



operational life, rehabilitation of this Plant together with Tinau Hydropower Plant under Electricity Transmission Expansion and Supply Improvement Project (ETESIP) jointly funded by ADB and GON is currently underway. This Project is a part of an effort of Nepal Electricity Authority to renovate and modernize aged hydropower plants.

Pharung Hydropower Station

Pharung Hydropower Station is the first power station in Nepal, which upholds the legacy of hydropower development in Nepal for more than a century. It was inaugurated by the late king Prithivi Bir Bikram Shah Dev on Monday, 22 May, 1911 (B.S. 1968, 9th Jestha).

It was erected with a grant from British Government at a cost of NRs. 0.713 Million. It is located in Pharung of Kathmandu district, nearly 12 km south from the city. There are two units each 250 kW with an aggregate installed capacity of 500 kW. Previously, only one unit was operated for an hour a day, but currently due to increasing shortage of drinking water it has stopped.



Some minor maintenance such as bush cutting, repair of quarter house and repair of coupling rubber pad of both units has been completed. A master plan has been prepared to develop the site as Live Energy Museum with constructions and establishments including scientific research center and model power station of wind, solar and hydro and as a centenary celebration memorial. Inauguration day of this Plant, 9 Jestha, is celebrated as a National Energy Day to mark the beginning of Hydropower Development in Nepal.

Hetauda Diesel Power Plant

Hetauda Diesel Power Plant with installed capacity of 14.41 MW is located at Hetauda, Makawanpur and acts as a standby to hydropower plants. The first phase with three engine sets of English Electric Co. Ltd. was commissioned in 1963 and the second phase with four



engine sets of GEC Diesel Ltd. was commissioned in 1980 in assistance with British Government. It adds to generation mix providing operational flexibility. This Plant is in standly condition and operates in an emergency when there will be severe power shortage. This year, the plant was made to operate during Tihar and shutdown of MMHEP, as instructed by LDC. Soaring fuel prices severely restricts its operation. Presently, it is able to operate at capacity of 10 MW. Major works this year include repair of 16 CSV Engine cooling towers silencer pipes, overhead travelling crane, replacement of lube oil and filters besides routine maintenance works.

Rehabilitation Project under Medium Generation Operation and Maintenance Department Gandak Hydropower Plant Rehabilitation Project

Gandak Hydropower Plant Rehabilitation Project is being carried out with loan assistance from the ADB under Energy Access and Efficiency Improvement Project (EAEIP). The Project mainly consists of design, fabricate, supply and install of trash rack cleaner with log



grappler and trash rack panels to improve trash handling system at intake. The other works of the Project include replacement of gantry crane to facilitate the operation of stop-logs gates during repair and maintenance of units. The project is scheduled to be completed by December, 2015 this year.

Sundarijal Hydropower Plant Rehabilitation Project

The Government of Nepal (GoN) has received financing from the Asian Development Bank (ADB) in the form of loan, under the Electricity Transmission Expansion and Supply Improvement Project (ETESIP) Rehabilitation of Sundarijal Hydropower Plant. This Project is a part of an effort of NEA to renovate and modernize the project to a capacity of 1MW. Major works of the Project consist of renovation and modernization of electromechanical and substation system at power house as well as remodeling of Nagmati Intake, repair and maintenance of gates and



civil structures at headworks. The bids have already been invited to carry out the rehabilitation works and the Project is scheduled to be completed by mid of 2017.

Tinau Hydropower Plant Rehabilitation Project

Tinau Hydropower Plant was developed on Chaitra, 2034 (March/April, 1978) in 3 (three) phases by utilizing the flow of Tinau River as a joint initiative between the erstwhile Ministry for Water and Power/ His Majesty's Government and the United Mission to Nepal (UMN)



with an objective of electrifying Butwal-Khasauli as well as facilitating industrial development in the area. The proposed Rehabilitation Project is financed by the Asian Development Bank (ADB) in the form of a loan under Electricity Transmission Expansion and Supply Improvement Project (ETESIP). The Project aims to increase the efficiency and generation of the power plant for which renovation and modernization of electromechanical system, repair and maintenance of headworks and reinforcements of distribution line and substation are undertaken. The Project will also replace existing short Suspension Trail Bridge as part of promoting small-scale gender-sensitive infrastructure development to facilitate commuters and support livelihoods in the vicinity. Currently, procurement related activities are underway and the Project is scheduled to be commissioned by July, 2017.

Technical Support Department

Technical Support Department provides guidance and expert support for under-construction projects and existing power plants of NEA. This Department which is under Deputy Managing Director, Generation Directorate envisages to provide much needed technical support to projects under construction as well as operation by mobilizing the multidisciplinary expertise within NEA. Major activities undertaken in the fiscal year 2071/72 include: annual generation forecasting, providing key technical inputs to a number of projects both under-construction as well as in operation.

The department has provided recommendation for the protection works for the severe slope stability problem at access road to dam site of Kaligandaki 'A' Hydropower Station. Further, the department has also provided technical support to Kulekhani I Hydropower Station in

damage assessment of earthquake and preparation of plan for monitoring of project structures.

Jure landslide which occurred in 2014 July caused severe damages to Sunkoshi Hydropower Station. This department provided the much needed technical guidance for the rehabilitation of the project which has resumed generation now.

This department has also provided its services through a number of study committees in Middle Marsyangdi, Kali Gandaki 'A', Kulekhani I, Kulekhani III and Upper Trishuli 3A project. The framework for Operation and Maintenance of NEA Hydropower plants which is critical for efficient generation is being studied by this department and will be completed soon.

Nepal Electricity Authority

Generation Directorate

Actual Generation for Fiscal Year 2071/72 (FY 2014/15 A.D.)

Unit: MWh

S.N o.	Power Stations/Month	Shrawan	Bhadra	Ashwin	Kartik	Mangsir	Poush	Magh	Falgun	Chaitra	Baishakh	Jestha	Ashad	Total
1	Kaligandaki 'A'	92893.00	94718.00	93846.00	89647.00	79804.00	63775.00	47628.00	49830.00	54446.00	72514.00	96732.00	94150.00	929,983.00
2	Middle Marsyangdi	47282.72	48324.38	47179.75	47231.25	37403.50	30473.37	11838.75	23625.88	26554.75	37981.05	49097.69	50,325.00	457,318.09
3	Marsyandi	45934.40	46659.20	36827.60	49103.80	41677.80	35540.50	26605.70	26809.30	29409.00	36966.20	49584.90	47,863.10	472,981.50
4	Kulekhani I	39.00	11.00	79.00	3141.00	3642.00	3732.00	9481.00	5494.00	9808.00	24797.00	22614.00	7243.00	90,081.00
5	Kulekhani II	18.90	-	34.58	1600.46	1941.80	2053.90	4763.71	2693.50	4743.93	12197.84	11183.94	3,508.07	44,740.63
6	Trishuli	10470.55	10975.55	11985.90	12208.50	11645.60	11229.50	8701.70	9362.90	10873.60	4283.80	12143.90	10881.90	124,763.40
7	Gandak	-	-	-	-	-	-	-	503.40	-	-	-	1290.30	1,793.70
8	Modi Khola	2357.80	5711.50	6089.80	8427.40	5896.20	4585.90	3360.50	3418.80	3902.40	3319.60	5989.50	5895.80	58,955.20
9	Devighat	7781.06	8738.93	9215.25	9306.98	9322.37	9275.82	7343.50	7972.38	8982.01	3459.96	7896.04	8448.39	97,742.69
10	Sunkoshi	3197.90	473.10	-	-	3179.80	4326.60	3215.90	3272.80	3740.00	1608.00	0.00	0.00	23,014.10
11	Ilam (Puwa Khola)	3917.26	4125.36	4118.42	4024.15	2686.56	1904.93	1400.69	1500.07	1385.93	2264.91	2089.57	2994.43	32,412.28
12	Chatara	51.00	2.25	-	-	-	-	-	-	-	-	-	-	53.25
13	Panauti	180.40	134.47	175.53	129.34	162.65	121.26	55.22	151.97	93.22	113.28	125.81	189.24	1,632.38
14	Seti	758.07	870.93	882.90	884.83	801.81	833.49	910.89	886.77	812.88	904.86	920.70	796.68	10,264.81
15	Fewa	213.03	214.69	262.60	104.11	270.38	362.94	282.77	197.66	171.52	102.80	-	128.24	2,310.74
16	Sundarjal	441.00	435.33	420.33	453.00	436.00	394.66	310.00	319.33	289.66	278.33	389.32	363.32	4,530.26
17	Pharping	0.66	0.32	1.05	0.83	0.65	0.37	0.23	0.25	0.08	0.03	-	-	4.46
	Total (Hydro)	215536.75	221395.01	211118.71	226262.64	198871.11	168610.24	125898.55	136039.00	155212.98	200791.66	258767.36	234077.47	2,352,581.49
18	Multifuel	-	-	-	-	-	-	-	-	-	-	-	-	-
19	Hetauda Diesel	5.33	4.68	-	81.05	-	-	1133.69	5.01	11.58	6.97	3.35	2.89	1,254.54
	Total (Thermal)	5.33	4.68	-	81.05	-	-	1133.69	5.01	11.58	6.97	3.35	2.89	1,254.54
	Grand Total	215,542.07	221,399.68	211,118.71	226,343.70	198,871.11	168,610.24	127,032.24	136,044.02	155,224.56	200,798.63	258,770.71	234,080.35	2,353,836.03

Note: Provisional figures subjected to final audit

Nepal Electricity Authority
Generation Directorate

Generation Related Statistics and Performance Indicators for Fiscal Year 2071/72 (2014/15 A.D.)

S. N	Power Stations	Installed Capacity (MW)	Total No. of Units	Actual Generation (MWh)			Maximum Generation in a year till date/year (MWh)	Design Generation (MWh)	Generation Target (MWh)	Backfeed (MWh)	Transmission to Grid (MWh)	Net Transmission to Grid (MWh)	Local Distribution (MWh)	SSR (%)	Plant Factor (%)	Employee
				FY 2069/70	FY 2070/71	* FY 2071/72										
1	Kaligandaki 'A'	144.0	3	847,258.00	864,103.00	929,983.00	929,983.00(2071/72)	842,000.00	857,752.48	2,473.00	928,561.27	926,088.27	680.00	99.66	73.72	125
2	Middle Marsyangdi	70.00	2	428,082.21	434,171.71	573,318.09	457,318.09(2071/72)	398,000.00	430,156.56	12,244.57	460,389.50	448,144.93	121.17	98.07	74.58	75
3	Marsyangdi	69.00	3	450,136.00	461,688.10	472,981.50	483,928.20(2052/53)	462,500.00	437,020.94	446,049.00	899,989.60	453,940.80	-	97.93	78.25	73
4	Kulekhani-I	60.00	2	92,829.00	94,084.00	90,081.00	249,680.00(2056/57)	211,000.00	130,182.14	84,561.67	164,978.67	80,417.00	7,915.21	99.00	17.14	89
5	Kulekhani-II	32.00	2	39,642.83	46,569.53	44,740.63	122,757.00(2056/57)	104,600.00	69,430.48	56.80	44,552.77	44,495.97	-	99.45	15.96	45
6	Trishuli	24.00	6+1	124,776.20	111,846.80	124,763.40	154,423.75(2053/54)	163,000.00	123,040.00	159,917.19	269,492.03	109,574.84	14,197.57	99.65	59.34	81
7	Gandak	15.00	3	19,207.70	8,802.30	1,793.70	52,272.70 (2043/44)	106,380.00	7,269.47	118,985.62	88,809.96	(30,175.66)	34,368.06	#	1.37	35
8	Modi Khola	14.80	2	30,718.60	41,637.80	58,955.20	67,348.90 (2063/64)	92,500.00	51,471.56	55,962.50	99,503.00	43,540.50	13,774.80	98.57	45.47	41
9	Devghat	15.00	3	100,563.60	95,427.00	97,742.69	106,277.70(2056/57)	114,000.00	100,241.22	80,743.87	187,165.50	106,421.63	2,499.41	#	74.39	53
10	Sunkoshi	10.05	3	63,577.00	64,667.40	23,014.10	66,383.10 (2068/69)	70,000.00	39,399.05	700.62	21,974.16	21,273.54	1,253.10	97.94	26.14	55
11	Ilam (Puwa Khola)	6.20	2	30,435.66	29,604.95	32,412.28	34,640.93 (2064/65)	48,000.00	31,343.00	1.64	32,334.11	32,332.47	-	99.75	59.68	40
12	Chatara	3.20	2	1,643.75	2,355.25	53.25	5,219.75 (2063/64)	6,000.00	3,674.56	-	-	-	562.45	#	0.19	27
13	Panauli	2.40	3	1,510.81	2,206.52	1,632.38	4,654.80 (2058/59)	6,970.00	2,743.06	-	-	-	-	#	7.76	28
14	Seti	1.50	3	10,512.54	10,892.52	10,264.81	11,616.19 (2067/68)	9,310.00	10,622.23	-	-	-	-	#	78.12	37
15	Fewa	1.00	4	2,081.96	2,050.14	2,310.74	3,919.47 (2034/35)	2,200.00	2,340.20	-	-	-	-	#	26.38	37
16	Sundarjal	0.64	2	4,198.29	3,481.29	4,530.26	4,530.26 (2071/72)	4,770.00	4,317.93	-	4,517.62	4,517.62	-	99.72	80.81	23
17	Pharphing	0.50	2	15.06	5.94	4.46	48.65(2064/65)	-	-	-	-	-	-	0.00	0.10	4
	Total(Hydro)	469.29	48	2,247,189.21	2,273,594.26	2,352,581.49	-	2,641,230.00	2,301,004.86	961,696.47	3,202,268.19	2,240,571.71	75,371.77	98.89	57.23	831
18	Multifuel	39.90	6	9,954.28	4,981.43	-	86,215.07 (2055/56)	-	-	696.50	-	(696.50)	-	0.00	-	36
19	Hetauda Diesel	14.10	4+3	8,868.62	4,768.93	1,254.54	24,203.64 (2055/56)	-	-	-	1,243.33	1,243.33	-	99.11	1.02	33
	Total (Thermal)	54.00	13	18,822.89	9,750.36	1,254.54	-	-	-	696.50	1243.33	546.83	-	63.73	0.27	69
	Grand Total	523.29	61	2,266,012.10	2,283,344.62	2,353,836.03	-	2,641,230.00	2,301,004.86	962,392.97	3,203,511.51	2,241,118.54	75,371.77	98.87	51.35	900

Note: * Provisional figures subjected to final audit

Energy metering problem at Gandak, Devghat, Chatara, Panauli, Seti & Fewa hydropower stations.

Transmission Directorate

Transmission Directorate is responsible for development, implementation and operation of high voltage transmission system. This business group is headed by a Deputy Managing Director and has Grid Operation Department (GOD), System Operation Department (SOD), Grid Development Department, Major Transmission Projects 220kV, Major Transmission Projects 400kV, and Cross Border Transmission Line Project, each headed by a Director.

This business group monitors, operates and constructs transmission lines and substation facilities to evacuate power generated by both NEA and IPP owned power plants and undertake reinforcement of the existing transmission system. Nepal's first-ever 400kV Nepal-India cross-border transmission link is nearing completion with the leading involvement of this business group. The Hetauda-Dhalkebar-Inaruwa 400kV transmission line, which is under construction, will help to build a strong and robust transmission grid in near future.

Transmission Directorate is entrusted to prepare have prepared Transmission System Master Plan for 2015 to 2035 upon which NEA intends to develop river basin wise transmission system as a long term strategy for power development of Nepal.

I. System Operation Department (SOD)

As in the past years, Load Dispatch Centre has been working round the clock to keep the operation of the Integrated Nepal Power System (INPS) on the right track through the use of computer based Supervisory Control and Data Acquisition (SCADA) system.

The devastating earthquake of Baishak 12, 2072 (April 25, 2015) caused the large screen projection display to collapse and it crashed on top of the two operator consoles/servers. Main SCADA server, as well as other servers, was also damaged. However, with the efforts by LDC engineers, the SCADA software system and the servers were restored within 8 hours and the Integrated Nepal Power System could then be restored. The repair works was further carried out and the damaged display wall was restored (partially) on May 3rd.

The availability of real time data and better communication system have improved the overall availability of power stations and transmission lines and has helped towards fast restoration of the power system in case of black-outs, thereby reducing loss of revenue. The magnitude of load shedding has also been

maintained to maximum 77 hours per week.

For the continued smooth functioning of the system, it is necessary that the data acquisition from the power stations and substations be updated according to the latest changes/modifications in the respective stations. The trained manpower in the LDC has been able to keep the data up-to-date in the SCADA software in the LDC, through the regular maintenance works. Around Rs. 174 million revenue is being received annually by leasing (to Nepal Telecom and other private companies) the fibers from the fiber optic cable.

II. Grid Operation Department

The Grid Operation Department (GOD), has the main responsibility of transmitting reliable and quality power from distant generators to various load centers. The Department also provides connection facilities to IPPs and Bulk Consumers at different voltage levels by accomplishing Connection Agreement as per NEA Grid Code. The other major responsibility of this Department is to look after the operation of 66kV & above Substations and Transmission Lines along with routine and breakdown maintenance works including up-gradation, extension, replacement works, reactive compensation, rehabilitation works etc. The three division offices in Kathmandu, Hetauda, Butwal and three branch offices in Duhabi, Pokhara & Attaria are working under GOD for the fulfillment of these responsibilities:

Major Works performed in the F/Y 2071/72 are as follows:

Transformer Upgrading, Compensation and Substation Reinforcement Works (Completed)

This department has executed numbers of Transformer reinforcement, upgrading works in various Substations. Up-gradation, Reactive Power Compensation and rehabilitation of power system equipments in the Substations are being carried out to meet the increase of power demand and Voltage problem. The existing Transformers after being replaced are reused in other Substations after necessary Overhauling and Maintenance works. Reallocations of such Power Transformers among Substations are a cost effective solution for load management.

Various works executed by this department have supported to reduce forced load shedding caused by inadequate substation capacity. The department has carried out and completed following major up-gradation and reinforcement works in FY 2071/72.

a. Major Up gradation and Reinforcement Works

- Installation of new 132/11kV, 30MVA Transformer at Pokhara S/S.
- Installation of new 33/11kV, 16.6MVA Transformer replacing the existing 3MVA at Damauli S/S.
- Installation of new 33/11kV, 16.6MVA Transformer replacing the existing 5MVA at Dhalkebar S/S.
- Installation of new 33/11kV, 16.6MVA Transformer replacing the existing 7.5MVA at Butwal S/S.
- Shifting and Installation of 132/33kV, 15MVA Transformer replacing the existing 10MVA at Attaria S/S.
- Shifting and Installation of 132/33kV, 10MVA Transformer replacing the existing 5MVA at Mahendranagar S/S.
- Installation of new 66/11kV, 2x30MVA Transformers replacing the existing 2x15MVA at Birgunj S/S. (GSRP I Project)
- Installation of new 132/66kV, 2x63MVA Transformers replacing the existing 2x45MVA at Parwanipur S/S. (GSRP I Project)
- Installation of new 66kV, 30MVA Capacitor Bank Bay at Parwanipur S/S. (GSRP I Project)
- Installation of new 66/11kV, 31.5MVA Transformer replacing the existing 22.5MVA at Teku S/S.

b. Work in progress:

Following major up-gradation & Reinforcement works for Substation are initiated and are under progress

- Installation of new 132/33kV, 63MVA Transformer Bay at Duhabi S/S.
- Installation of new 132/33kV, 30MVA Transformer at Singati S/S of Singati - Lamosanghu Corridor project as the project upgraded the existing 132/33kV, 15MVA Transformer at Lamosanghu S/S with new 30MVA.
- Installation of new 132/33kV, 2x30MVA Transformers to replace existing 2x15MVA at Attaria S/S.
- Installation of new 132/33kV, 30MVA Transformer to replace existing 7.5MVA at Lamahi S/S.
- Installation of new 33/11kV, 16.6MVA Transformer to replace existing 3MVA at Lamahi S/S.
- Installation of new 132/11kV, 22.5MVA Transformer Bay at Lekhnath S/S.
- Shifting and Installation of 66/11kV, 2x15MVA

Transformer replacing the existing 2x6MVA at Simara S/S.

- Installation of new 132/11kV, 22.5MVA Transformer Bay at Parwanipur S/S. (GSRP I Project)
- Shifting and Installation of 132/66kV, 2x45MVA Transformer replacing the existing 2x20MVA at Hetauda S/S. (GSRP I Project)

c. Grid Connection Agreement

- The Department has successfully accomplished the Grid Connection Agreement with 17 IPPS (Independent Power Producers) for 629.22MW Capacity to mitigate the future load demand.

d. Maintenance Works

- Restoration work of 132kV Tower near Babai river of Lamki - Kohalpur 132kV Transmission Line was done, which was damaged due to flood.



- Maintenance works during Earthquake period:
Repair and Restoration works of Transformers were done at Balaju S/S, Lainchaur S/S, Teku S/S, Panchkhal S/S, Suichatar S/S, Lamosanghu S/S and New Chabahil S/S, which were damaged due to devastating earthquake on 2072/1/12.
- Routine Maintenance works were carried out as per schedule for Substations and Transmission Lines.
- Breakdown maintenance works were carried out as per requirement.
- Regular Relay Testing works were also carried out. Total of 340 relays were tested on 8 Substations.

e. Transmission Loss Status

Comparison of Transmission Line Loss of different F/Y					
S. No.	F/Y	Total Import Energy(MWh)	Total Export Energy(MWh)	Transmission Line Loss Energy(MWh)	Transmission Line Loss in Percentage
1	2068/69	3736805.66	3520922.32	215883.34	5.78%
2	2069/70	3772905.51	3574865.1	198040.41	5.25%
3	2070/71	4120153.81	3889823.1	230330.71	5.59%
4	2071/72	4394005.172	4193004.031	201001.1419	4.57%

f. Power Evacuation through Parallel operation of Transformers:

- The 2x10MVA, 132/33kV Transformers in Damauli S/S were being operated separately, due to which IPPs near that area were unable to evacuate full Power through Damauli S/S. The Transformers are now connected in parallel thus making it easier for the IPPs for evacuating their full generated power.

g. Revenue Generation:

- The Department has made a total income of NRs. 30,48,234.00 from Grid Impact study, hiring testing equipments, programming and testing energy meters and by selling Grid Code and Tender Documents.

III. Grid Development Department (132kV Transmission Line Projects)

Brief summary of projects under different stages of development are presented below:

A. Recently Completed Projects

1. Kusaha-Kataiya 132kV Tr. Line

This project was started on 2069/070 (2012/13) to increase Power Import from Kataiya India to address



Kusaha-Kataiya Reconductoring

immediate Load Shedding problem facing by the country and for cross boarder power exchange enhancement. Total 15km length 13km Nepal side and 3km India side

132kV Single Circuit conductor has been replaced by High Temperature Low Sag (HTLS) ACCR conductor. After completion of this work NEA started importing load up to 145MW (previously 80MW) to reduce the load shedding. This up gradation work was completed on Shrawan 30, 2071 (15th August 2015).

2. Butwal-Kohalpur 132kV Second Circuit Transmission Line

The main objective of this project consists of 208km second circuit stringing on existing double circuit towers from Butwal to Kohalpur and construction of one new 132kV Substation at Kusum, Banke in between Lamahi and Kohalpur. The rationale behind this project is to provide adequate power to Western Nepal so as to meet the electricity demand requirement of ADB and Danida funded Rural Electrification Projects in the region and to provide power to upcoming cement factories in the region. This project is intend to evacuate power from Chameliya hydropower plant (30 MW) and to supply part of the Butwal area from Tanakpur to alleviate the present load shedding problem. This line is also help to evacuate 36MW free power to be received from Upper Karnali Hydropower Plant. Work of this project was completed on 7 Ashadh 2072 (22 June 2015)

B. Projects under Execution

1. Thankot – Chapagaon - Bhaktapur 132kV Transmission Line

This project was started in FY2055/056 with the objective of improving and enhancing supply reliability, transmission capacity of the substations within Kathmandu Valley with estimated project cost of US\$ 23 Million. Project was scheduled to be completed by FY 2072/073 (2015/016).

Upgrading of Bhaktapur and Balaju substations and construction of new Matatirtha substation under the project has been completed and handed over to Kathmandu Grid Division. Due to protest from local inhabitants in the Lalitpur district, construction of transmission line and substation at Harisiddhi has been stopped. Due to timely unavailability of right of way (RoW) at Lalitpur district, prolongation of construction time, transmission line contract was terminated.

For stringing of conductors on erected towers in Kathmandu and Bhaktapur districts, a new contract had been awarded and conductor stringing work in Kathmandu district has been completed. The line stringing work in Bhaktapur district is undergoing.

2. Dumre – Damauli – Marsyangdi 132kV Transmission Line

The objective of this project is to evacuate and enhance reliability of the power generated by Marshyangdi Power Plants. Cost of this project is estimated to US\$ 18.62 Million which is jointly funded by loan assistance of ADB, GoN and NEA. This project is started on F.Y 2065/66 and scheduled to be completed by FY 2073/74 .



2nd circuit conductor stringing work under Middle Marsyangdi-Dumre-Lower Marsyangdi 132 KV Transmission line corridor

Major component of this project includes construction of 40 km of 2nd circuit transmission line on same existing tower from Middle Marsyangdi-Dumre-Lower Marsyangdi and double circuit 21.43 km transmission line from Dumre tapping to Damauli, construction of 132/33KV, 24/30 MVA New Marsyangdi (Markichowk) substation at dam site of Lower Marsyangdi power plant. As of Ashad 2072, for Transmission Line Construction Package, about 24.438 km of second circuit conductor stringing work and 14.908 km OPGW stringing work was completed. Under Dumre-Damauli new Transmission line 26 numbers of tower foundation work was completed. Construction contract has been signed for substation package and 132/33 KV, 24/30 MVA substation construction work at Markichowk, Tanahau is under progress

3. Kohalpur-Mahendranagar 132kV Transmission Line 2nd Circuit

The rationale behind this project is to provide adequate power to Western Nepal so as to meet the electricity demand requirement of ADB and Danida funded rural electrification projects in the region in addition to regular electricity demand, to provide power to upcoming cement factories in the region, to evacuate power from

Chameliya hydropower plant (30 MW) and to supply part of the Butwal area from Tanakpur to alleviate the present load shedding problem. The line is also required to evacuate 36 MW free power to be received from Upper Karnali hydropower plant.

The project was started in FY 2011/12 with US\$ 26.7 million loan assistance from ADB and is scheduled to be completed in FY 2015/016. The scope of works under Kohalpur– Mahendranagar (Lalpur) second circuit Transmission consists of second circuit stringing on existing double circuit towers (190km), replacement of existing ground wire with OPGW from Kohalpur to Mahendranagar and construction of necessary line bays in associated substations. Two new 132/33/11 kV, 30 MVA substations at Bhurigaun of Bardiya and Pahalmanpur of Kailali district has been proposed to meet the increased electricity demand of Bardiya and Kailali districts. Contract has been signed for both Transmission line and Substation packages and construction work is in progress now.

4. Chapali 132kV Substation

Two part of this project are Chapali 132kV Substation and Chapali Substation Expansion.

The objective of the Chapali 132kV substation project is to cater and improve power supply reliability of the increased residential and commercial demand of Northern part of Kathmandu. The project started in FY 2008/09 (2065/066) is scheduled to be completed in 2072/073 (2015/016). Total cost of the project is US\$ 16 Million and jointly financed by loan assistance of ADB, GoN and NEA.

The main output of the Chapali 132kV substation is to construct new 132/11kV, 30MVA substation at Chapali and built 7.7km long 66kV underground cable interconnection between existing substations at Chabahil and Lainchhour.

As of Ashadh 2072, Chapali substation construction work is completed and is in process to charge. Underground Cabling work is completed but Bay expansion work for connecting this cable is in process.

The objective of Chapali Expansion project is to supply increased power supply to Chabel, Balaju and Bhaktapur substations to meet growing electricity demand in Kathmandu valley. The major scope of works under this project includes expansion works at Chapali Substation with Supply and Installation of 132/66 kV power transformers, 66kV double circuit underground cable from Chapali Substation to Okhaltar and construction of appropriated line bays and other associated works.

The estimated cost of this project after award of Contract is approximately NRs. 807.0 million and is jointly funded by loan assistance of Asian Development Bank and Government of Nepal.

The project is started in FY 2069/70 and is scheduled to complete in FY 2072/73. Approximately 33.0 percent of total works under this project is completed till FY 2071/072.

5. Kabeli 132kV Transmission Corridor

The objective of this project is to connect Hydro Electric Projects (HEPs) in the Kabeli Corridor to Integrate Nepal Power System (INPS) to facilitate power evacuate of 150 MW and to improve the distribution network of Jhapa, Ilam, Panchthar and Terhathum districts.

Scope of project includes construction of 90 km 132 kV double circuit transmission line from Damak substation to Kabeli substation, replacement 76 km of shield wire with optical fiber ground wire (OPGW) from Duhabi substation to Anarmani substation, construction of 132/33kV substations at Damak, Ilam, Phidim and Kabeli and community based rural electrification within 2.5 km of either side of the transmission line.

Project Cost is estimated at US\$ 37.77 Million and funded by WB, GoN and NEA. Project was started in FY 2062/063 (2006/07) and is estimated to be completed by FY 2072/73 (2016/17).

6. 132/33kV, 30MVA Godak (Ilam) Substation

Project status as of Ashadh 2072, Damak construction work completed and put into operation, Ilam substation construction work completed and charged for evacuation of power generated by Sanima Mai Hydro Project by IPP via 33kV system. Phidim S/S and Kabeli S/S construction work completed and is in testing process.



Godak (Ilam) 132/33 kV substation

90% transmission line construction material received at project site. Section-I (Damak-Ilam) TL (35km) construction work is in last stage, out of 95 for first section, 93 tower foundations and erection work completed, 31.06km conductor stringing work completed. Construction works for second and third section started. Land Acquisition for Tower Pad started in Section-II and Section-III.

7. Singati-Lamosangu 132kV Transmission Corridor

The objective of this project is to evacuate power from different hydroelectric projects to be developed by different IPP's in the Tamakoshi - Singati basin. Project will construct Singati - Lamosangu 40 km 132 kV Double Circuit Transmission Line and 132/33 kV, 30 MVA substation at Singati. Total cost of the project is about US\$ 13 million and is funded by GoN. The project was started in FY 2065/066 and is scheduled to be completed in 2072/073 (2015/016).

As of Asadh 2072, 65% of substation construction work is completed so far. Land acquisition work at Dolakha for tower footing is completed and Transmission Line construction work is about to start.

8. Hetauda-Kulekhani-II-Siuchatar 2nd Circuit 132kV Transmission Line

The objective of this project is to reinforce INPS and increase power evacuation capacity in this tie line. This line will also be used for power evacuation from Kulekhani III Hydroelectric Project which is under construction. The project is rescheduled to be completed in 2072/073(2015/016). Cost of this project is estimated to US\$ 2.5 Million and funded by GoN. Scope of the project includes construction of 46km 2nd circuit 132kV Transmission Line on same existing Tower and Bay extension works at substations (Hetauda, Matatirtha and Siuchatar).

So far, Construction of four number of 132 kV Bays at Matatirtha, Hetauda and Siuchatar is completed and pre-commission testing have been done (in last FY) and on the line construction side, construction of about 32km 2nd circuit 132kV Transmission Line out of 46 km has been completed from Fakhel to Chaukitol, Hetauda (in last FY). From October 2015, Second Circuit line construction Work has been stopped by local people of Matatirtha and Hetauda demanding RoW compensation no progress could be made in FY 2014/15 in second circuit line construction despite repeated dialogues with the RoW land owners and concerned District Administration Office to solve the right of way (RoW) problem.

9. Bhuhule-Middle Marsyangdi 132kV Transmission Line

The objective of this project is to evacuate power generated by Upper Marsyangdi A. Cost of this project is estimated to US\$ 3.0 Million and funded by GoN. The project is started in 2070/071 (2013/014) and expected to be completed on 2072/073 (2015/016)

Scope of this project includes construction of 132kV single circuit, 22km transmission line from Bhulbule Switchyard of Upper Marsyangdi "A" to Middle Marsyangdi Switchyard and 132kV Bay extension at Middle Marsyangdi.



*Bhulbhule –Middle Marsyangdi Transmission Line
Tower Foundation Work*

As of Ashadh 2072, Cadastral Survey completed for the Tower Pad land and Land acquisition, land acquisition decision has been completed, compensation distribution is being started and about 70% land owner has received the compensation. MoU has been signed with SINOHYDRO Power Company, developer of Upper Marsyangdi "A" to construct transmission line and Bay expansion work.

Out of 54 towers, 21 towers foundation completed; 10 are in progress, supply of tower material and line material shall be started soon. Tree counting work for RoW has been completed. Trees cutting approval has been given from District Forest Office to cut the trees on private land and is in progress. Request for trees cutting approval on government land has been submitted.

10. Kusma-Lower Modi 132kV Transmission Line

The objective of this project is to provide INPS connection at Kushma to the transmission line to be constructed by the Kaligandaki Corridor Project and to increase power evacuation capacity of the IPP's up coming in the Kaligandaki Corridor. Cost of this project is estimated to US\$ 3.5 Million and funded by GoN. The project started in 2070/071 (2013/014) and expected to be completed on 2073/074 (2016/017).

Scope of this project includes construction of 8km, 132kV single circuit transmission line on double circuit tower from Kusma to Lower Modi and 132kV Bay extension work at Lower Modi switchyard.

As of Ashadh 2072, tender was called for the construction work and construction contract was signed. Survey and design works have already started and the construction works shall also be started as per schedule.

11. Rupani 132kV Substation

The objective of this project is to expand INPS network and reinforce the power supply system in Siraha and Saptari Districts. Cost of this project is estimated to US\$ 3.8 Million and funded by GoN. Project is expected to be

completed on 2073/074 (2016/017)

Scope of this project includes construction of 132/33kV, 63MVA capacity substation at Rupeni and reinforcement of 33kV sub transmission line interconnecting to Siraha and Saptari Districts.

As of Ashadh 2072, Substation land acquisition is in final stage. Tender called for the construction work and construction contract signed. Construction work is about to start.

12. Syaule 132kV Substation

The objective of this project is to reinforce the power supply system in Doti, Dadeldhura and Acham Districts and to support power evacuation from Chameliya HEP. Cost of this project is estimated to US\$ 4.0 Million and funded by GoN. The project is initiated in 2070/071 (2013/014) and scheduled to be completed by FY 2073/074 (2016/017).

Scope of this project includes construction of 132/33kV, 30MVA capacity substation at Syaule, Dadeldhura and reinforcement of 33kV sub transmission line interconnecting to Acham, Doti and Dadeldhura.

As of Ashadh 2072, Substation land acquisition is in final stage. Tender called for the construction work.

13. Ramechhap (Garjyang)-Khimti 132kV Transmission Line

The objective of this project is to evacuate approximately 70 MW of power produced from the rivers in Rmaechhap and Dolakha districts. This project is funded by the Government of Nepal and the total estimated cost is NRs. 777,880,000 (Seven Hundred Seventy Seven Million Eight Hundred and Eighty Thousand). The major project component includes the construction of 30 MVA 132/33/11 kV hub substation at Chuchure VDC of Ramechhap district and a 30 km 132 kv double circuit transmission from the above substation to New Khimti substation at Devitar in Ramechhap District.

As of Asadh 2072, the TOR / Scoping document for the EIA have been approved, Public Hearing of EIA has been completed and a draft report of IEE has been prepared. Re-routing survey of the 5 km section of the transmission line is being undertaken by the PDD of NEA to join the line in New Khimti S/S. The expected completion date of the project is FY 2073/74(2016/017).

14. Bhaktapur-Baneshwor-Chobhar 132kV Transmission Line

The objective of this project is to increase power evacuation capacity of the IPP's up coming in the Sunkoshi Corridor and reinforcement of INPS. Cost of this project is estimated to US\$ 50 Million and funded by GoN. The project is scheduled to be completed by 2073/074 (2016/017).

Scope of this project includes construction of 22 km double circuit 800 Sq mm 132kV Under Ground Cable

from Bhaktapur to Baneshwor (New Airport) substation to Chobhar Substation + and 132/11kV, 45MVA capacity GIS substation and 132/11kV, 45MVA capacity AIS substation at Chobhar.

As of Ashadh 2072, Bhaktapur to Baneshwor, New Airport Feasibility Study work completed, New Airport to Chobhar yet to be conducted. Survey License with additional Chobhar sector is in process to acquire. Dialog is going on with Tribhuwan International Airport Authority to acquire land for New Airport Substation. MoU signed for IEE work.

15. Kohalpur-Surkhet 132kV Transmission Line

The objective of this project is to expand INPS. This project helps to supply reliable power to the cement industry to be established at Surkhet. In future Surkhet will be develop as pulling power HUB evacuating power from Karnali, West Seti, Tila and more IPP's .Cost of this project is estimated to US\$ 9.56 Million and funded by GoN. The project is started in 2066/067 (2009/010).

Scope of this project includes construction of 50 km double circuit transmission line from existing Kohalpur substation to Surkhet and 132/33kV, 30MVA capacity substation at Surkhet.

As of Ashadh 2072, Detail Survey work completed, EIA report submitted to Ministry for approval and is in final stage, Surkhet substation land acquisition is in final stage. Discuss is going on to upgrade Kohalpur-Surkhet 132kV transmission line project to construct in higher transmission voltage level.

16. Modi-Lekhnath 132kV Transmission Line

The objective of this project is to increase power evacuation capacity of the IPP's upcoming in the Modi and Madi river basin. Scope of the project includes construction of 132kV Double Circuit Transmission Line 42km from New Modi to Lahachok (Hemja) Substation to Lekhnath Substation and new Lahachok 132/33/11kV substation. Cost of this project is estimated to US\$ 20.39 Million and jointly funded by Exim Bank of India and GoN. The project is scheduled to be completed by FY 2073/074 (2016/017).

As of Ashadh 2072, Detail Survey work is completed; Scoping ToR Document is submitted for approval to Ministry of Energy as part of Environmental Impact Study. Project approval received from Exim Bank of India and notice published for Lahachok (Hemja) substation Land Acquisition.

17. Solu Corridor 132kV Transmission Line

The objective of this project is to increase power evacuation capacity of the IPP's upcoming in the Solu Corridor and expansion of INPS. It includes construction of 90km of Double Circuit Transmission Line with CARDINAL conductor from Tingla (Solu) substation

to Mirchaiya and 132/33kV New Substation at Tingla. Cost of this project is estimated to US\$ 29 Million and jointly funded by Exim Bank of India and GoN. The project is scheduled to be completed by FY 2073/074 (2016/017).

As of Ashadh 2072, Survey work and Initial Environmental Examination work completed, Land Acquisition process concluded for Tingla substation. Project Management Consultant submitted project DPR, tender called for the work and tender evaluation report submitted to the management for approval.

C. Survey/IEE Study Completed Projects

- Hapure-Tulsipur 132kV Transmission Line, 18 km
- Dordi Corridor (Kritipur- Udipur/Marsyangdi) Transmission line, 16 km

D. Feasibility Study Completed Projects

- Gulmi-Argkhanchi-Chanauta 132kV Transmission Line, 110 km
- Karnali Corridor (Lamki-Upper Karnali) 132kV Transmission Line, 60km
- Bajhang-Deepayal-Attariya 132kV Transmission Line, 130 km
- Surkhet-Dailekh-Jumla 132kV Transmission Line, 107 km
- Kaligandaki-Gulmi (Jhimruk) 132kV Transmission Line, 43 km
- Dhalkebar-Loharpatti 132kV Transmission Line, 20 km
- Kusaha-Biratnagar 132kV Transmission Line

E. Projects under Feasibility Study

- Budhganga-Umedi-Pahalwanpur 132kV Transmission Line, 75km
- Butwal (Gorusinge)-Lumbini 132kV Transmission Line

F. Projects for Power Supply to Cement Industries

Government of Nepal has taken policy of developing transmission line and road networks up to the site to promote cement industries. A minute of understanding was signed between Ministry of Industry (MoI) and NEA. According to the understanding NEA will execute the transmission line project as per the instruction of MoI which in turn will provide required funds. Projects aimed for power supply to cement industries at different stages of implementation are as follows:

1. Kusum - Hapure 132kV Transmission Line

The main objective of this project is to develop transmission system up to the site of Dang Cement Industries to be established at Hapure of Dang. Further

extension of this line will benefit Sonapur and Rolpa Cements. The project started in FY 2008/09 with an estimated cost of NRs. 500 million and is financed by GoN.

The main activities of this project covers: construction of 22 km Kusum-Hapure 132 kV transmission line and 132/33kV, 30 MVA Substation at Panchakule of Dang. Project achievement till date includes: Substation construction completed and ready to charge, construction of 66 nos. of towers foundation and 63 nos. of tower has been erected out of total 71 numbers. Total 5km of conductor stringing completed.

2. Mirchaiya-Katari 132kV Transmission Line

The objective of this project is to provide power supply to Maruti Cement Industry to be established at Katari. Cost of this project is estimated to NRs. 374 Million and funded by GoN. The project is scheduled to be completed by 2072/073 (2015/016).

Project components includes construction of 132/33 kV, 30 MVA substations at Mirchaiya. For this purpose one circuit of existing Dhalkebar – Lahan 132kV line will be looped-in and looped-out at Mirchaiya in Siraha district to extend the 132kV transmission line to Katari. As of Ashadh 2072, substation construction work is completed, substation is about to charge.

3. Lamahi-Ghorahi 132kV Transmission Line

The objective of this project is to provide power supply to Ghorahi Cement Industry and Ghorahi Municipality. Cost of this project is estimated to US\$ 6.5 Million and GoN through Ministry of Finance allocated budget for this work. The project is scheduled to be completed by FY 2072/073 (2015/016). Project components includes construction of 15 km 132 kV transmission line from existing Lamahi Substation to Laxmipur VDC Goglee and construction of 132/33 kV, 30 MVA substations at Laxmipur VDC Goglee.

As of Ashadh 2072, construction contract signed. Substation equipment design/ manufacturing work completed and is about to receive at site. Forest Field Data Collection work completed for Transmission Line Right of Way, file sent to Forest Department for approval.

IV Transmission Line Construction

Department 220kV and above

A. Projects under Execution

1. Khimti – Dhalkebar 220 kV Transmission Line

The project was started in 2059/60 with the objective of enhancing transmission capacity, improving supply reliability, reducing losses and voltage drop through construction of 220kV double circuit line and is scheduled to be completed in 2071/72 (2014/015). The project cost is estimated at US\$ 28 Million and is jointly funded by World Bank, GoN and NEA.

The scope of the project includes construction of 75 km long Khimti-Dhalkebar 220kV transmission line on double circuit tower with single circuit of twin Bison ACSR conductor (initially charged at 132kV) and 132kV line bays extension work at Khimti and Dhalkebar substations in the first phase and stringing of second circuit in the second phase.

As of Ashadh 2072, 100% Substation equipment supply was completed. Bay extension work at Dhalkebar and Khimti was completed. Stringing of the second circuit is in progress. Out of 188 no. of Tower Pad Foundations, 181 foundations were completed. 178 no. of Tower Erection was completed. 65km out of 73km conductor stringing was completed. Construction work is interrupted due to right of way compensation dispute at Sindhuli.

2. Hetauda - Bharatpur 220kV Transmission Line

The objective of the project is to enhance the transmission capacity and reliability of the Integrated Nepal Power System (INPS), to evacuate the power to be generated by other hydro power plants from western region of Nepal. Cost of this project is estimated to US\$ 24.25 Million and funded jointly by loan assistance of WB, GoN and NEA. The project is started in 2009 and scheduled to be completed by 2072/073 (2015/16).

Construction of about 75 km long double circuit Hetauda-Bharatpur transmission line initially to be string single circuit 220kV transmission line and associated 132kV substations are being taken. The substations component includes expansion of existing Hetauda and Bardghat substations and construction of New Hetauda and New Bharatpur substations.

As of Ashadh 2072, almost all transmission line construction materials received at site, Out of 226 towers 137 towers foundation is completed, 54 towers erection completed. Right of way clearance work and land acquisition for tower footing are in progress. Civil works for New Hetauda and Bharatpur substations are near to completion, substation equipments for both substations receive at site and installation works are in progress.

3. Bharatpur - Bardghat 220kV Transmission Line

The objective of Bharatpur-Bardaghat 200 kV transmission line is to enhance the transmission capacity and reliability of the Integrated Nepal Power System (INPS) and to evacuate the power to be generated by other hydro power plants from western region of Nepal. Cost of this project is estimated to US\$ 17 Million and funded by GoN and NEA including the loan assistance of WB. The project is started in 2009 and estimated to be completed by the F/Y 2073/074 (2016/017).

The scope of project is the construction of approx. 74 km long double circuit 220 kV line connecting New-Bharatpur substation (under construction) and existing Bardaghat substation using ACSR "Bison"

duplex conductors, comprising of a total of 246 towers. 220 kV lines shall be initially energized at 132 kV. Progress as of Ashadh 2072 includes completion of 34 tower foundations and erection of 20 towers. Also completed is the cutting of 6600 trees (out of total 28000) lying in the Right of Way.

B. Funding Secured Projects

1. Tamakoshi-Kathmandu 220/400kV Transmission Line

The objective of this project is to evacuate power from IPP's upcoming projects in the Khimti, Tamakoshi & Sunkoshi basins and also to increase reliability of cross border transmission. The project will construct about 105 km double circuit 400 kV transmission line (which shall be initially charged at 220kV) with construction of 220 kV line bays at New Khimti; new 220/132 kV substations at Barhabise (Sindhupalchowk) and Haledi (Kavrepalanchowk) and 132/11 kV Substation at Changunarayan (Bhaktapur). The project is jointly funded by ADB, Norway and GoN. The project is scheduled to be completed by 2074/075 (2017/018).

As of Ashadh 2072, survey work at 400 kV voltage level has been completed for New Khimti to Barhabise and Barhabise to Changunarayan sections. The ToR for IEE study has been approved by the Ministry and preparation of IEE report is going on. Bidding document has been prepared for New Khimti-Bahrabise section which is under review by ADB. Preparation of bidding document for Bahrabise-Changunarayan section is in progress. Public notice for acquisition of land at Barhabise has been published. Land identification for substation at Haledi and Changunarayan has been completed and land acquisition process has started. Land acquisition for these substations is expected to be completed in next fiscal year. IFB for both packages is scheduled to be published in next fiscal year.

2. Koshi 220kV Transmission Corridor

Objective of this project is to increase power evacuation



WAPCOS and NEA officials during Survey Mapping of Substations of Package 2 (Basantapur Substation)

capacity of upcoming HEPs in the Koshi and Mechi zone of Nepal. Following are the main components of the project.

Package 1: Construction of 107 km of 220kV Double Circuit Transmission Line from Inaruwa-Basantapur-Baneshwar-Tumlingtar. (Inaruwa-Basantapur Double Circuit Vertical Configuration Galvanized Steel Towers with twin peak, initially only one Circuit will be strung with Quad ACSR Moose conductor with single Peak i.e. OPGW and Basantapur-Baneshwar-Tumlingtar Double Circuit Vertical Configuration Galvanized Steel Towers with twin peak, , initially only one Circuit will be strung with Twin ACSR Moose conductor with single Peak i.e. OPGW).

Package 2: Construction of 220/132/33kV new substations at Tumlingtar and Basantapur and 220/33 kV new substation at Baneshwar.

Package 3: Construction of about 40 km of 220kV double circuit Transmission Line from Taplejung to Basantapur and 220/132/33kV Substation at Taplejung.

Cost of this project is estimated to US\$ 112.0 Million and jointly funded by Exim Bank of India and GoN. 90 MUSD has been set aside for this project out of 250 MUSD Line credit Agreement (21 October 2011) between government of Nepal and Exim Bank of India . The Project is expected to be completed by FY 2076/77. Wapcos Ltd India has been appointed as the PMC of the Project.

The Bid for the Package 1 has been floated on March 10, 2015 and due date of submission was on June 12, 2015. Currently the bids of this package are under evaluation. The Bids for Package 2 is expected on September 2015.

3. Chilime-Trishuli 3B 220kV Transmission Line Project

The objective of this project is to evacuate the electrical power generated by the NEA and IPPs, upcoming in the Trishuli-Chilime basin. The estimated cost of the project is US \$ 35.00 million which is jointly funded by the GoN, EIB and KfW. Under this project, construction of Chilime substaion at Goljung V.D.C., Rasuwa and 26.5 km long 220kV transmission line from Chilime Hub Substation to Trisuli 3B Hub Substaion at Mankamana V.D.C., Nuwakot shall be done. The project was started from FY 067/68 and expected to be completed by FY 2074/75.

As of Ashadh 2072, Detail Survey work and Feasibility Study for 220 kV transmission line and Chilime Hub substation has been completed. Furthermore, final report of IEE is submitted to MOE for approval. Land acquisition for Chilime Hub Substation at Goljung VDC, Rasuwa is near completion with land price has already been determined and money has already been deposited to District Administration Office, Rasuwa for distribution to Land owners. Selection of consultant for detail design

and construction supervision of the project is ongoing at the moment by signing pre-financing agreement with the donor KfW.

4. Trishuli 3B HUB 220kV Substation Project

The objective of this project is to increase power evacuation capacity of the IPP's up coming in the Chilime, Trishuli basin. Project includes construction of 220/132/33kV Hub substation at Manakamana VDC of Nuwakot District. Cost of this project is estimated to be US\$ 22.9 Million and jointly funded by EIB, KfW and GoN. Project is expected to be completed by FY 2073/074 (2016/017).

As of Ashadh 2072, Detail Survey work and Environmental study have been completed, Consultant for Detail Feasibility, M/S Lahmeyer International submitted the Report; Loan agreement signed with EIB and KfW, Land acquisition process has been completed. Tender Agent appointed for selection of design and construction supervision consultant, shot listing of the consultant is in final stage.

5. Lekhnath-Damauli 220kV Transmission Line

The objective of this project is to increase power evacuation capacity of the IPP's up coming in the Modi, Madi basin and reinforcement of INPS. Cost of this project is estimated to US\$ 22.0 Million and funded by GoN. Project will construct about 45km of Double Circuit 220kV Transmission Line from Lekhnath substation to New Damauli Substation and 220/132/11kV Substations at New Damauli. Project is expected to be completed on 2073/074 (2016/017)

As of Ashadh 2072, Detail Survey has been completed, IEE work yet to be done. Process started to revise the survey work as detail survey has been completed 5 years before and land selection work started for substation construction.

V Major Transmission Line Projects, 400kV

A. Projects under Execution

1. Nepal-India Electricity Transmission and Trade Project (NIETTP) Hetauda- Dhalkebar – Duhabi 400kV Transmission Line

Started in 2010 under World Bank financing the objective of the project is to establish cross-border transmission capacity of about 1,000 MW to facilitate electricity trade between India and Nepal and increase the supply of electricity in Nepal by the sustainable import of at least 100 MW of electricity. The major project activities include: Construction of 285 km of 400 kV transmission line from Hetauda to Inaruwa, construction of 220 kV substations at Hetauda, Dhalkebar and Inaruwa,

preparation of transmission system master plan and synchronized operation of the Nepal and India grids. The project is expected to be completed in 2016.

Detailed route survey and check survey, soil investigation for foundation and soil resistivity tests have already been completed for whole line. Tower foundation work is completed at 316 locations and is ongoing at other places. Two hundred and seventy one numbers of towers have been erected. Supply and delivery of conductor and earth-wire has been completed. Factory inspection test of two numbers of 220/132 kV, 160 MVA transformer for Dhalkebar substation has been completed. The transformers are on the way to site. Construction of substations at Hetauda, Dhalkebar and Inaruwa is ongoing. Draft report of Transmission System Master Plan study has been prepared.

B. Feasibility Study Completed Projects

- Hetauda-Butwal 400kV Transmission Line, 168 km
- Butwal-Lamki 400kV Transmission Line, 300 km
- Lamki-Mahendranagar 400kV Transmission Line, 102 km
- Duhabi-Anarmani 400kV Transmission Line, 100 km

C. Survey/ IEE Study Completed Projects

- Butwal- Sunauli 400 kV Tr. Line
- Duhabi-Jogbani 400 kV Tr. Line

D. Projects under Feasibility Study

- Mulpani-Naubise-Hetauda 400kV Transmission Line
- New Khimti- Okhaldhunga- Dhalkebar 400kV Transmission Line

Distribution and Consumer Services Directorate

NEA has the various business groups named as Directorates, among which the Distribution and Consumer Services (DCS) Business Group is named as DCS Directorate (DCSD). This DCSD is responsible for overall management of electricity distribution services and networks of NEA. The major activities of this directorate include planning, expansion, operation, maintenance and rehabilitation of the electricity distribution networks including substations up to 33 kV voltage level and consumer services activities such as new consumer connections, meter reading, billing, and revenue collection. The directorate has lately introduced some of the smart meter reading and billing techniques as a pilot projects in the Kathmandu valley with plans to introduce even better techniques and expand them in the entire areas. The operation and maintenance of off grid small hydro power plants in its area, also falls under the jurisdiction of this directorate. There are Planning and Technical Services Department (PTSD) and Community Rural Electrification Department (CRED) at the central level and eight regional offices to manage the overall distribution and consumer services activities in more effective and efficient manner under this directorate. This business group is headed by the Deputy Managing Director as a chief and subsequently under the directorate, PTSD & CRED at the centre and eight regional offices are headed by the Directors/chiefs.

DCSD is the largest directorate of NEA in terms of number of employees and business activities. Approximately 67% of the total staff of NEA are employed in DCSD. This is also on the forefront to earn revenue for sustaining operation, maintenance and development activities of NEA. DCSD is providing services to consumers through its 100 Distribution Centers spread over the whole country.

Performance Highlights

In FY 2014/15, total number of consumers under DCS reached 286,8000 an increase of 5.72 % over the last fiscal year's figure. In comparison to the previous years, less increase in consumer number in last fiscal year was due to insufficient availability of energy meters. However, it is expected to increase substantially once the energy meters are available in the first quarter of the FY 2015/16.

Customer Category	No of consumer (% of total consumers)	Sales %	Revenue %
Domestic	94.29	45.36	43.98
Non-Commercial	0.58	3.44	5.07
Commercial	0.58	7.92	11.67
Industrial	1.46	35.73	34.17
Others	3.09	7.55	5.11

Similarly, in FY 2014/15, a total of 3743.75 GWh of energy was sold earning a gross revenue of Rs. 30483.460 Million, an increase of 9.66% and 11.28% over the previous year's energy sales and revenue respectively. Industrial and Commercial consumer categories combined together represent only 2.04% of

the total number of consumers but shared 45.84% of total sales. Similarly, the domestic consumer category represents 94.29% of total consumers and contributed 43.98% to the total sale.

Programs and Activities

The programs and activities of DCSD were hard hit in FY 2014/15 due to unavailability of goods, specially the distribution transformers and meters and metering equipments due to ongoing rift on procurement practices. However, it was resolved with relentless effort and the goods are now expected for store delivery by the first quarter of FY 2015/16, after which the consumer services activities shall be smoothly run. DCSD took special drives to expedite the activities for loss reduction, metering & billing and decreasing amount receivables from black listed consumers. An additional collection of about Rs. 40.03 million and Rs. 43.33 million was made from additional billing and collection from black listed consumers respectively during the period of review. The goods on stock were closely monitored which resulted in substantial decrease in the stock material/amount. As part of reinforcement and expansion of the distribution systems, many programs, projects and the activities are undertaken in FY 2014/15 to expand and improve the service delivery. These programs and activities are executed by the Departments at center and Regional Offices.

Loss Reduction Activities

In FY 2014/15, special drives were initiated to reduce the technical and non-technical losses. Feeder-wise loss evaluation was continued and extra load shedding hours were set for high loss prone feeders. This practice

was found substantially effective to bring down the losses of such feeders. At the same time, distribution centers were assigned loss targets to achieve within the prescribed time frame. This was also linked with the performance of concerned distribution center chief and a significant loss reduction was observed in many areas. Special drives were initiated for monitoring and supervision of overall DCS activities with priority for loss reduction. Regular review meetings were organized at the central as well as regional level. The special efforts of the employees and the support of the various governmental and nongovernmental institutions in controlling non technical losses brought in good results. The overall result towards loss reduction was found to be encouraging during review period. The Business Group carried out regular monitoring of the feeders and areas having more than 30% energy loss. The activities of the Loss Controlling Committee formed under the chairmanship of Chief District Officer were effective enough to reduce non-technical losses. The support from local administration was commendable in some districts as Kapilbastu and Chitawan. Loss Controlling Committee at the center level issued directives to the concerned offices to improve the loss situation. During the FY 2014/15, a total of 40577 numbers of consumer lines were disconnected from which Rs 441,110,000 was recovered. Similarly action was taken against 1971 consumers for electricity pilferage and Rs 15,310,000 was recovered from it. Regular monitoring, data downloading and analysis of the large industrial and commercial consumers were augmented.

Significant loss reduction was observed in many high non technical loss prone areas by the use of Ariel Bundled Conductor (ABC) cable. Upgrading of overloaded conductors and transformers was also carried out to reduce the non technical losses. As per NEA decision, the electromechanical meters of the consumers of capacity 25-50 kVA range continued to be replaced with electronic (TOD) meters. Despite the adverse working conditions at local levels, especially in terai and some hilly areas, continued efforts and measures taken to control losses brought fruitful results by bringing down the distribution system losses to 17.30 % in this period.

Demand Side Management

With grant assistance from Asian Development Bank, DCSD completed program to distribute 750,000 energy saving CFL lamps in selected areas. Installation of capacitor banks in Nepalgunj, Jaleswor, Rajbiraj and Tanki-Sinuwari substations resulted substantial voltage improvement in the areas. The construction of 33/11 kV Substations near load centers continued during review period and majority of them are expected to complete in FY 2015/16. This will substantially reduce the losses

in the feeder lines and improve reliability of electricity supply.

Future Plans and Programs

As high system loss is a major challenge for NEA, DCSD is trying to make every effort to bring down the distribution system loss which contributes in substantial proportion. It is also planning to improve the quality of the services through the use of new technologies and capacity building to meet the challenges of new environment in utility business. Consumer complaints shall be addressed without delay and the procedure for new connection related works shall be made simple and user friendly. DCSD is committed to establish centralized customer care center to ensure single point of contact for all consumer related activities, timely service, less processing time for new connection and centralized control and monitoring over the entire customer care process. NEA is planning to implement Automatic Meter Reading (AMR) system. Plans are to make available the payment and billing information in internet so that consumer can access information on line. A system will be implemented for consumers to pay the electricity bill either through bank or in NEA's revenue collection center.

Safety is one of the aspects where DCSD is entrusting major priority. In this regard, not only the NEA employees, public awareness is also important. For this the directorate is giving priority for people's awareness for electrical safety, right from the implementation of the project.

Various programs and activities under DCSD are executed



People's awareness campaign towards electrical safety organized

by the Departments at center and Regional Offices. Some glimpses of the major activities undertaken are presented below in subsequent headings.

Planning and Technical Services Department

The Planning and Technical Services Department (PTSD) is responsible for planning and preparation of distribution system expansion programs and supporting DCSD in the technical and commercial matters. The department is trying to introduce distribution planning first time in NEA with the help of the World Bank. Major works under this department include-

- Identification of potential rural electrification and substation rehabilitation projects and implement them
- Programming/re-programming, data download and analysis of TOD energy meters & metering equipments
- Monitoring and evaluation of region wise monthly distribution system losses. Assist to identify and implement programs for loss reduction in distribution systems
- Initiate modern facilities for the electricity consumers in the field of meter reading, billing and revenue collection
- Plans to execute distribution planning incorporating demand side management and loss reduction as an integral part of it

Hundred collection centers have computerized billing system till date and plans are to extend it to all with modern facilities in the coming years. The Computerized Billing Division under PTSD has plans to cover entire distribution centers with 'Any Branch Payment System'. The department is also implementing AMR for high valued consumers and study is under way to introduce SMS billing as well.

Energy Monitoring and Auditing of Distribution Substations

Under the program, static energy meters were installed at distribution substations to measure the amount of energy delivered by the substations enhancing the energy accountability. The Planning and Technical Services Department co-operated with Grid Operation Department to install ToD meters in various grid substations. The static meters installed at different substations were downloaded to check and verify the data. The program for installation of Bulk Supply Meters and the Metering Unit was also continued in FY 2014/15. The energy monitoring and audit was also augmented verifying the data with concerned transmission grid and generation units.

Project Highlights

1. Energy Access and Efficiency Improvement Project

This project is being implemented under ADB loan/grant. The various subprojects under this are as follows.

Project for Energy Efficiency through Loss Reduction

This project has been started with the objective of reducing technical losses in the distribution networks of Kathmandu valley and Birgunj Simara corridor. This project is jointly financed by Asian Development Bank (ADB), GoN and NEA. The project has identified 27 distribution feeders with unacceptable high loss in Kathmandu valley and Birgunj where rehabilitation is required. The scope of this project includes upgradation of 462 Nos of Distribution Transformers (100, 200 and 300 kVA), replacement of 214 Km of overhead 11 kV undersized ACSR conductor with 120 sq.mm. XLPE Covered Conductor, use of 35 Km of 300 sq.mm. 11 kV Underground Power Cable and 401 Km of 95 sq.mm. LV ABC Cable. Major Line material for this project are received. Pre-construction survey is completed and installation work is underway in Kathmandu valley and Birjung. The project is scheduled to complete in FY 2015/16.

Distribution System Augmentation Project

This project is jointly financed by Asian Development Bank (ADB), GoN and NEA. The scope of the project includes:

- i) Construction of new 33/11 kV, 6/8 MVA substation at Baniyani, Mirchaiya, Dhanushadham, Paraul, Barhathawa, Banskot, Kushma, Mainapokhar and 11 kV switching station in Mirmi, Swoyambhu & Mulpani; and
- (ii) Construction of 95 km of 33 kV and 156 km of 11 kV lines in the vicinity of substation area. Out of these substations Paraul and Barathawa have been



Construction Works of 33 kV S/S

already commissioned. The next are following soon.



Latest 12 kV Indoor switchgears installed at different 33/11kV S/S

The construction of substations and interconnection feeders is expected to complete in the current fiscal year.

Project for Solar Powered Street Lighting and Grid-tied PV Solar System

This project is run under ADB Grant and aims to install solar powered street lighting systems in some parts of five municipalities of the Kathmandu valley. This project's scope also includes installing 100 kWp and 60 kWp Grid-tied PV solar power systems in NEA Training Centre, Kharipati and Bir Hospital, Kathmandu respectively. Solar street light project will facilitate the promotion of solar powered street lighting in important places of Kathmandu valley. For the successful implementation of this project, an advisory committee comprising of representatives from Ministry of Federal Affairs and Local Development and members from other stake holders has been set up. The project includes purchase of solar powered street- lighting system, replacement /installation and setting up a system to ensure a smooth maintenance. Around 1000 sets of solar street lamps will be installed which will reduce peak demand by 0.2 MW and save about 700 MWh per year. Two contracts have been signed for supply and installation of solar street lights and one for PV Grid tied solar systems and the project is expected to complete by FY 2015/16.

Pilot Project for Public Private Partnership in Distribution System

This project is jointly financed by ADB and GoN. The project aims at enhancing the quality of service delivery and overall efficiency through Public Private Partnership program in the sector of electricity distribution. The

scope of the project includes procurement of the consulting services for the implementation of Public Private Partnership in three distribution centers of NEA. The consultants have submitted draft bidding document and franchisee agreement which will be used in implementing PPP in distribution. The consultant has shortlisted the distribution centers for implementation.

Expanded Electricity Distribution Project

This is one of the components of Electricity Transmission Expansion and Supply Improvement Project financed by ADB under Loan No. 2808-NEP (SF). The scope of project which is divided into three lots comprises of up-gradation of substations at Gaur, Nijgarh, Chandragadhi, Jare, Belbari, Parasi, Gorkha, Krishnanagar, Tauliahwa, Amuwa, Gaddhachauki & Mirmi and development of 11 & 0.4 kV network in the affected area along the proposed Tamakoshi- Kathmandu 400 kV Transmission Line. The total cost of this project is USD 9.5 Million. The contract agreement for all the three lots has been signed and the project is scheduled to be completed by 2015/016.

2. Computerized Billing and Networking Division

The objective of the this Division is to implement a common billing system in all the revenue collection centers of NEA for improved billing and revenue collection processes in a modern, efficient and cost effective manner. M-Power Billing system has provided NEA with a wider and more sophisticated array of functions and features that would enhance the billing efficiency and provide greater visibility into the entire process chain.

M-power Billing System is in operation in 100 collection centers which covers more than 75% of the total consumers and covers 80% of the total NEA revenue. Handheld Meter Reading Device (HHD) has also been implemented which is in operation in 70 different collection centers. This has helped reduce human errors during meter reading

Any Branch Payment System (ABPS) has been implemented in 13 different revenue collection centers inside Kathmandu valley (Ratnapark DC, Naxal Sub Branch, Baneshwor DC, Chabahil SubBranch, Kuleshwor DC, Balaju Sub Branch, Lagankhel DC, Chapagaon Sub Branch, Pulchowk DC, Thimi DC, Jorpati DC, Kirtipur DC, Maharajgunj DC) which has helped the customers to pay their bill in any of the above locations with ease. This system will also help NEA to collect revenue and get analytical reports on time. Further this division has plans to expand this system outside Kathmandu valley (Birgunj DC, Biratnagar DC, Hetauda DC, Simara DC etc...).

This division has completed the replacement of One Month Delay Billing System (PSICOBs/RAAS) to Mpower (Spot) Billing System in Birgunj DC, Janakpur DC, Kalaiya DC and Rajbiraj DC in the review period. This

has also increased the revenue of NEA for that Fiscal Year.

Third Party Payment System from Prabhu Billing System will be introduced from Bhadra, 2072 for Lagankhel DC, Pokhara DC and Bharatpur DC as a pilot project. This will help the consumers to pay their bill with various means (Counter, Mobile, KIOSK etc.). in any outlets that are connected with Prabhu. This system will be focused for rural consumers where the consumer can pay their billing in a nearby outlet and save time and money and the revenue for NEA will also be increased.

This division is planning to introduce "informative mobile App" where the consumer can get information about the dues and other information regarding NEA.

Customized training programs were conducted to NEA staff who have been operating with the billing system. The division plans to conduct more training programs to enhance the skill and knowledge of these staff for smooth operation of the Mpower system.

3. Matatirtha Naubise 33 kV Transmission Line Project

This project aims at supplying power to United Cement Industry Pvt. Ltd. in Naubise, Dhading and existing NEA consumers in its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area also. The scope of the project includes the construction of 33/11 kV, 2*6/8 MVA substation along with double circuit 13 km 33 kV line. The project was started in FY 2009/10 with funds from infrastructure development program of Ministry of Industry, GoN and is scheduled to complete in FY 2015/16.

4. Matairtha Malta 33 kV Transmission Line Project

This project aims at supplying power to Laxmi Cement Industry Pvt.Ltd. in Malta, Lalitpur and evacuation of power produced by Pashupati Energy Pvt. Ltd. (6Mw) and supply existing NEA consumers in its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area also. The scope of the project includes the construction of 33/11 kV, 10/13.3/16.6 MVA substation along with double circuit 35 km 33 kV line. The project was started in FY 2009/10 with funds from infrastructure development program of Ministry of Industry, GoN and is scheduled to complete in FY 2015/16.

5. Matatirtha Markhu 33 kV Transmission Line Project

This project aims to meet the growing demand of electricity in Kulekhai area of Makawanpur district and its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area. The

scope of the project includes the construction of 33/11 kV, 6/8 MVA substation along with single circuit 13 km 33 kV line. The project was started in FY 2009/10 with funds from GoN and is scheduled to complete in FY 2015/16.

6. Dhulabari 33 kV Substation Project

The project funded by GoN aims to meet the growing demand of electricity in Dhulabari area of Jhapa district and its vicinity. The project will help to improve the quality of supply and reduce the technical losses of the area. The scope of the project includes the construction



Completed Dhulabari 33/11 kV, 6/8 MVA Substation

of 33/11 kV, 6/8 MVA Substation with interconnection facilities. The construction of Substation has been completed and 4.5 km long 33 kV Sub Transmission Line work is in progress and is scheduled to complete within 6 months.

7. Buipa-Okhaldhunga 33 kV Transmission Line Project

The scope of this project includes the construction of 32.5 km of 33kV transmission line, 80 km of 11kV and 80 km of LV distribution line and two 33/11kV, 1.5MVA substations one each at Khotang (Buipa) and Okhaldhunga districts. Testing of Buipa Substation has been completed. Construction work at Okhaldhunga S/S is in progress; materials and equipment have been delivered to the site, control building constructed and civil construction is in its final stage. Construction of 32.5 km of 33kV line, 69.79km of 11kV line and 31.5 km of LV distribution line and 18 nos. of Transformers has been completed and construction of remaining LV line is in progress. Buipa to Bakshila, a major component of project has been almost completed. Bakshila, one of the remote VDC and centre for North-East region of Khotang has been electrified.

Since, 33kV line from Jaljale to Buipa is charged at 11kV, parallel 11kV line construction has been completed transformer and connection are shifted to new 11kV lines in Udayapur and Khotang district and 33kV line is freed. Maintenance of 33kV line from Jaljale to Buipa is almost completed & testing of this line at 33kV capacity is in progress. Also Buipa-Lamidanda-Bhadaure (Okhaldhunga district) parallel 11kV line construction has been

completed. The project is expected to complete in FY 2015/16.

8. Rasuwaghat-Khotang S/S and RE Project

Major works to be performed under this Project include the construction of 14 km of 33kV transmission line, one 33/11kV 1.5 MVA capacity substation at Rasuwaghat of Khotang district, 90km of 11kV and 90 km of LV distribution line in Khotang and Udaypur district. Out of these, 6 km of 33kV transmission line, 37.2km of 11kV line and 33km of LV distribution line construction have been completed and 11nos. of distribution transformer have been installed. 33kV Bay extension at Jaljale substation has been completed. Construction of remaining 4km 33kV line is in progress. Store cum Quarter building has been constructed in Bagedhunga, Khotang. 33/11kV,750kVA and 11kV VCBs are installed and tested at Bagedhunga.5km long parallel 11kV line construction has been completed to free Rasuwaghat-Bagedhugna 33kV line. Polling works, line construction for rural electrifications are in progress.

9. Bharatpur-Madi 33 KV Sub-transmission Line & RE Project

This project is financed by the Govt. of Nepal (GoN) and is being implemented for the electrification of Madi area and its vicinity in Chitwan district. The scope of the project includes construction of a 3 MVA, 33/11 kV substation, 20 km of 33 kV overhead line, 8 km of 33 kV underground Cable, 30 km of 11 kV line and 50 km of 0.4 kV line and installation of 24 distribution transformers. The project will provide electricity to about 11,000 households of the area. The construction of substation and U/G cable and Construction of 20 Km of 33 KV overhead line has been almost complete. The project is scheduled to be completed in FY 2014/15.

Besides, above the 33/11 kV, 6/8 MVA each substations at Parsa district and Chautara of Sindhupalchok district are under different stages of construction. The aim of these projects is to improve the quality of electricity supply in the area and also to reduce the system losses.

10. Khimti –Manthali 33 kV Transmission line and Substation Project

The project includes construction of 33kV Transmission line and 33 kV line bay at Ramechape District. Construction work is in progress and is scheduled to be completed in FY 2016/17.

11. Madankudari Makaibari Singati 33 kV transmission line and Substation Project

The project includes construction of 33 kv line from Madankudari to Makaibari and construction of substation. Accquiring land for substation construction is under progress.

Community Rural Electrification Department

In order to expand the access of electricity services to the rural areas on the demand driven approach, the Government of Nepal (GoN) has brought forward Community Rural Electrification Program (CREP) since 2003 which is being executed. NEA had established a separate Department " COMMUNITY RURAL ELECTRIFICATION DEPARTMENT (CRED)" to efficiently conduct the Community Rural Electrification Program of GoN in 2003. Later on in 2010, CRED was dissolved in the process of restructuring of NEA and the activities of CREP were carried out through eight Regional Offices. However, the CREP activities were slowed down due to lack of coordination at center and regional level. On this background, CRED has been formed again in July 2013. Under CREP, the GoN is contributing 90 % of the rural electrification Cost through NEA and the Rural Electric Community (REC) is required to contribute remaining 10 % of the cost. NEA sells bulk power to the RECs and RECs are responsible for operation and management of electricity distribution within the area. NEA provides services up to 11 kV Line and the REC itself is responsible for 400/230 Volt Line. NEA, Community Rural Electrification By-Law 2071 governs the activities of NEA, REC and CREP.

Consumer friendly rural electrification program is becoming more effective to promote energy access, consumer capacity building and livelihood development. Community Rural Electrification Program (CREP) has been playing an integral role in rural development, empowering Rural Electric Community (REC) and to alleviate Poverty. In the journey of 11 years, CREP has achieved a major success of accessing electricity to more than 45000 households of 55 districts through 480 nos. of Different Community entities.

Despite of having many problems like insufficient human resources and adolescent office itself, the performance of CRED evaluated as satisfactory in FY 2014/15. During review period, CRED initiated activities to resolve setback old community rural electrification contracts successfully and by the result hanged out contracts were regularized and most of them were completed in this year. CRED's major activities of the year include:

- New NEA, Community Rural Electrification By-Law has been approved by making the existing

CRE By-Law 2071 compatible to the motive of re-formed CRED and addressing the problems experienced in community rural electrification program & operational activities. However, it is yet to be submitted for approval.

- All together 55 community rural electrification proposals including extension of existing 11/0.4-0.23 kV distribution network and transformer upgrading of estimated cost more than approved. These proposals comprise construction of 11 kV Line 219km, 400/230 Volt line 300 km.
- In order to strengthen the operating capacity of RECs, training for Linemen and Accountant was conducted. 25 Linemen personnel and 25 Account personnel were trained this year.
- In order to bring uniformity in cost estimation of rural electrification work, the major line materials cost (Pole, Conductor, Insulator, Transformer and Stay set etc) has been fixed.
- CRED has planned different activities in FY 2016/17 for meaningful and result oriented implementation of CREP that will strengthen the CRED and support the sustainability of the RECs too.

Regional Offices

There are eight regional offices (ROs) under DCSD located at Biratnagar, Janakpur, Hetauda, Kathmandu, Pokhara, Butwal, Nepalgunj and Attariya. The functions of operation, maintenance, and expansion of the distribution system up to 33 kV voltage level and consumer services such as new consumer connections, meter reading, billing, and revenue collection are carried out by Regional Offices. In addition, operation and maintenance of off grid small hydro power plants also falls under regional office's jurisdiction. Each regional office is headed by a director/chief and reports to the General Manager. There is provision of technical division headed by a Manager in each RO which looks after the technical matters, rural electrification activities and management of small hydro power plants. The regional chief is also supported by account and administrative sections in the related matters.

Loss Reduction Program



Interaction Programme being held at Butwal Regional Office



NEA, employees confiscating electric motor used illegally for water pumping



Electrical goods confiscated for illegal use of electricity

The distribution networks comprise of technical and non-technical losses, in which proportion of non-technical losses is quite high. During the year under review, various measures taken in the preceding years were continued to reduce the non-technical losses. Massive awareness campaigns as workshops and review meetings were implemented in various distribution centers. Besides review meetings were organized in each regional office by a DCS central team to evaluate the overall performance of the office.

Strict measures for electricity theft control as confiscation of electric equipments and taking legal action against culprits were also conducted in various distribution centers with the help of local administration and security agencies.

Regional offices in co-ordination with DCSD and PTSD, Managing Director of NEA as a chief guest, implemented extensive programs for the enhancement of electrical infrastructure, revenue and to avoid electricity theft,

manipulation meter and metering units which mainly consisted of: manipulation meter and metering units which mainly consisted of:

Infrasture development and Admistritative reform

- Reinforcement of Distribution and Transmission line
- Preventive operation and maintenance
- management of metering Unit for inter branch unit control
- M- Power billing implementation effectively
- Proper downloading in time and regular monitoring of TOD meter
- Proper book keeping of Street light consumption and monitoring
- Numbering of poles used for transmission and distribution
- Updated single line diagram of Transmission and distribution line
- Community base management system and implementation
- System analysis report before load approval
- Training for basic computer operation
- Queue management system and CCTV application information and approval
- Massive mobilization of employee for the collection of black listed dues
- Adequate budget allocation for construction and maintenance of Transmission/ Distribution line and yearly program for the procurement of material and monitoring by one step ahead office concerned.

Loss reduction activities:-

- Installation of tamper proof meter enclosures and refurbishment of metering facilities



Meter resealing being done by NEA Employee

- Implementation of meter and meter enclosure seal management system to avoid tampering.

- Replacement of electro-mechanical meters by programmable poly phase electronic meters and replacement of unmatched current transformers to eliminate possible errors in multi plying factor.
- Investigations on illicit tapings and meter tempering
- Meter testing: Bulk/ Ordinary supplies
- Rehabilitation of meter cubicles
- Replacement of bare conductor with ABC cables in loss prone areas

EA management made various decisions as 'Immediate Action Plans' to improve its functioning. Among many, this plan included regular inspection of Time-of-Day (TOD) meters, data download and analysis to curb any connection fault or manipulation. All regional offices and distribution centers actively participated in this drive which was found to be much effective.

Customer Care

Distribution centers work as interfaces between NEA and its consumers. So, special efforts were taken to



Concluding session of 'Interaction program' organized by DCS at different Regional Office.

improve the quality of service at the consumer interface points. The employees took special efforts to serve our valued consumers in more effective way. With the Queue Management System at some of the cash collection centers, difficulties encountered by the consumers in queuing for making payments were minimized. Round the clock no-light services have been implemented in most of the urban no-light centers. These functions and activities were carried out by all regional offices. The region wise performance under the review period is summarized in Annex-1 and 2 below. Some of the glimpses of the regional offices are presented here under.

Biratnagar Regional Office Operational highlights

There are 15 Distribution Centers under Biratnagar Regional Office (BRO) spread over Mechi and Koshi zones. The distribution loss of BRO is 18.35%. Sales contribution to NEA system of this RO is 15.50%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –579686
Revenue (million) – Rs.4638.08
Numbers of consumers –492642

Project highlights

The major projects being implemented under this regional office are as under.

Rake-Rabi-Chisapani 33 kV Transmission Line Project

The project includes the construction of 25 km of 33 kV line, 40 km of 11 kV line, 40 km of LV distribution line, construction of 33/11 kV substation and 33 kV bay. Out of which, 23 km of 33 kV line and 10 km of 11 kV line has been constructed. Land for Switching Station at Chamaita of Ranke has been already acquired while land acquisition for Substation at Chisapani is still in process.

Tumlingtar-Dingla-Bhojpur 11 kV Transmission Line Project

The project includes the construction of 30 km of 11 kV and 25 km of LV distribution line in Sankhuwasabha and Bhojpur districts. The 11 kV and LV distribution line as per project scope has been completed. Installation of distribution transformers is not complete due to unavailability. The project work is constrained due to limited allocation of budget.

Dhankuta-Hile-Leguwa-Bhojpur 33 kV Transmission Line Project

The project includes the construction of 50 km of 33 kV transmission line, 52 km of 11 kV line, 50 km of LV distribution line and one 33/11 kV substation in Bhojpur district. Construction of 33 kV transmission line and 33 kV Bay/Switching Substation at Hile have been completed and are in operation. 23 km of 11 kV line and 15 km of LV line construction has been completed so far. Construction of 33/11 kV, Substation at Bhojpur is in progress. The project is scheduled to be completed by FY 2015/16.

Muga-Ghodetar-Bhojpur 11 kV Transmission Line Project

The project started in FY 2010/11. Scope of works includes 10 km of 11 kV line and 10 km of LV distribution line in different VDCs of Bhojpur district. Procurement of Hardware, Insulators, ACSR Conductor has been made and remaining portion of works is in progress.

Ranibas-Balardaha-Bhojpur 33 kV Transmission Line

The project started in FY 2010/11. 33 64 km of kV line survey has been completed in last fiscal year. Construction of 33/11 Substation at Ghoretar of Ranibas and 33 kV bay extension at Balardaha is to be done.

Piluwa 33/11 kV Substation Upgrading

The scope of works includes upgrading of 1.5 MVA, 33/11 kV transformer by 6/8 MVA, 33/11 kV power transformer and replacement of 33 kV Switchgear and Panels. Contract for supply, delivery, installation and commissioning of 6/8 MVA transformer was made and works is in progress and scheduled to be completed by FY 2014/15. Tender for replacement of Switchgear and Panels has been made and completion of works is scheduled to be finished by FY 2014/15.

Ilam-Phidim-Tablejung 33 kV Transmission Line Project

The scope of the project includes the construction of 90 km of 33 kV transmission line in Fidim and Tablejung district. Construction of 33/11 kV 1.5 MVA Substation at Phidim and 33 kV Bay at Ilam Substation has been completed. 83 km 33 kV line construction is complete. Remaining 7 km of 33 kV line, construction of 3 MVA substation at Tablejung and 33 kV Bay at Phidim Substation is yet to be completed.

Bokhim Lekharka (Bhojpur) Electrification Project

The project includes construction of 70 km of 11 kV line and 100 km of LV line in Bokhim, Khawa, Sideswor, Gupteswor, Nagi, Lekharka, Gogane, Timma, Kot, Chinamakhu and Annapurna VDC of Bhojpur district. Erection of poles for 11 kV line is in progress. There was no participation in tenders, though the bids were invited twice in the last fiscal year. So, project work could not be expedited.

Dhankuta-Hile-Ranibas-Bhojpur 33 kV Transmission Line Project

The project includes construction of 27 km of 33 kV line, 50 km of 11 kV line and 50 km of LV line in different V.D.C. of Bhojpur district. Erection of 33 kV transmission line has been completed. Construction of switching station at Pakhribas and substation at Ghoretar of Ranibas is yet to be commenced.

Other Projects

The following projects in the region are also in the various stages of execution.

- Panchthar Distribution Substation Project
- Aathrai Sakrantibazar 33 kV Substation Project
- Bhedetar (Rajarani) 33/11 kV Transmission line and Substation Project
- Chinpur Sitalpati 33 kV transmission line and Substation Project

Janakpur Regional office

Operational highlights

There are 11 Distribution Centers under Janakpur Regional Office (JRO) spread over Sagarmatha and Janakpur zones. The distribution loss of JRO is 28.21%. Sales contribution to NEA system from this RO is 8.58%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –321509

Revenue (million) – Rs.2081.061

Numbers of consumers –415685

Project highlights

The major projects being implemented under this regional office are as under.

Sangutar-Okhaldhunga 33 KV Transmission line project.

Major components of the project include the construction of 40 km 33 kV line, 40 km 11 kV line, one 33 kV bay at Sanghutar and 40 km LV distribution line. Pole erection for 20 km of 33 kV line has been completed. Procurement of 315 nos. of poles and 120 km of conductor with hardware has been made during the period of review for construction of 33 KV line and construction work is in progress.

Okhaldhunga-Salleri 33 KV Transmission line project

The major component of this project are construction of 40 km 33 KV line, 40 km 11 kV line, one 33 KV bay construction at Okhaldhunga substation and 1.5 MVA Substation & 40 km of LT line at Salleri of Solukhumbu district. Procurement of 315 nos. of poles and 120 km of conductor with hardware has been made for construction of 33 KV line and work is in progress.

Khurkot-Nepalthok 33 kV Transmission Line Project

Major components of the project include the construction of 25 km of 33 KV line, 25 km of 11 kV line, 40 km of LV distribution line at Sindhuli District & 33/11 kV, 1.5 MVA Substation at Nepalthok. The procurement of poles & conductor for 12 KM of 33 KV Transmission line has been completed and construction of line is in progress.

Hetauda Regional Office

Operational highlights

There are 8 Distribution Centers under Hetauda Regional Office (HRO) spread over Narayani zone. The distribution loss of HRO is 17.56%. Sales contribution to NEA system from this RO is 19.6%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –732126

Revenue (million) – Rs.5686.45

Numbers of consumers –334562

Project highlights

The major projects being implemented under this regional office are as under.

Chhatiwan 33/11 kV Project

The project scope includes construction of 33 kV line from Hatia to Chhatiwan and construction of 6/8 MVA, 33/11 kV substation at Chhatiwan of Makawanpur district. Land acquisition at Bhimsendamar of Chhatiwan is completed in FY 2013/14. Project is scheduled to complete in FY 2015/16.

Kathmandu Regional Office

Operational highlights

There are 18 Distribution Centers and 1 Transformer workshop under Kathmandu Regional Office (KRO) spread over Bagmati zone. The distribution loss of KRO is 12.5%. Sales contribution to NEA system from this RO is 26.49%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –991632

Revenue (MillionNRs) – Rs.9335.90

Numbers of consumers –580549

Any Branch Payment System is started in FY 2070/071 in following Distribution Centre:

Ratanpark, Kuleshwor, Baneshwor, Lagnkel and Pulchowk.

Project highlights

The major projects being implemented under this regional office are as under :

Chainpur VDC 2,3,4 Water drinking Electrification Project

The project includes construction of distribution system in Chainpur VDC 2,3,4 of Dhading district. Construction work is in progress and is scheduled to be completed in FY 2015/16.

Budhsing, Dansing, Gorsysng, Khadakbhanjhyang, Phikure, Kaule, Bhalche Distribution line Project

The project includes construction of distribution system in Budhsing, Dansing, Gorsysng, Khadakbhanjhyang, Phikure, Kaule, VDC of Nuwakot district. Construction work is in progress and is scheduled to be completed in FY 2015/16.

Sindhu-Dolakha Distribution line Project

The project includes construction distribution system different VDCs of Dolkha and Sindupalchowk district. Construction work is in progress and is scheduled to be completed in FY 2015/16.

Sano kimtang ma. Vi. Distribution line Project

The project includes construction of distribution system in sano kimtang of Nuwakot district. Construction work is in progress and is scheduled to be completed by the end of FY 2014/15.

Madankudari Makaibari Singati 33 kV transmission line and Substation Project

The project includes construction of 33 kv line from Madankudari to Makaibari and construction of substation. Acquiring land for substation construction is under progress.

Pokhara Regional Office

Operational highlights

There are 10 Distribution Centers under Pokhara Regional Office (PRO) spread over Dhaulagiri and Gandaki zones. The distribution loss of PRO is 13.53%. Sales contribution to NEA system from this RO is 5.92%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –221651

Revenue (million) – Rs.1794.06

Numbers of consumers –244306

Project highlights

The major projects being implemented under this regional office are as under.

Udipur Substation Upgrading Project:

The project has been started from FY 067/068 to upgrade the existing Udipur substation to 8 MVA capacity. Upgrading work has been completed and upgraded substation is in operation during period of review.

Udipur-Besisahar-Manang 33 kV Transmission Line Project

The project includes the construction of 90 km of 33 kV transmission line, 53 km of 11 kV, 53 km of LV distribution line and one 33/11 kV, 1.5 MVA substation in Manang and 33 kV bay extension in the existing Udipur substation. Out of 90 km long 33 kV transmission line, pole erection for 70 km up to Danaque of Manang district and stringing of conductor for 15 km up to Bulbule has been completed. Land acquisition for Manang Substation has been completed. Procurement of line materials (Insulator & Hardwares) for 15 km of 33 kV transmission line has been completed.

Galkot Substation Project

This project is being implemented to provide electric supply and Grid connection to IPP of Galkot area in Baglung district. The major component of this project are construction of 2 km 33 KV line, 27 km 11 kV line, one 33 KV bay construction at Baglung substation and 3

MVA Substation at Galkot of Baglung district. 33 KV Bay extension at Baglung substation has been completed. Land Acquisition and Civil work for land protection for Sub-station construction at Galkot has been completed. construction of 33 KV line and substation work is in progress.

Damauli-Bhorletar 33 KV Transmission line project

The major component of this project are construction of 25 km 33 KV line, 5 km 11 kV and .4KV line, one 33 KV bay construction at Damauli substation and 6/8 MVA Substation at Bhorletar of Lamjung District. Procurement of 980 nos. of poles and 75 km of conductor with hardware has been made for construction of 33 KV line and work is in progress.

Lekhnath-Sindhakesi-Lamjung 33 KV Transmission Line project

The scope of the project consists of the construction of 60 km of 33 kV transmission line, 10 km of 11 kV and .4KV of LV distribution line and 33/11 kV 6/8 MVA substations at Sindhakesi Kaski and Construction of 33 KV Bay at Lekhnath Substation, Kaski districts. Land acquisition for Sindhakesi Substation has been completed.

Other Projects

The following projects in the region are also in the various stages of execution.

- **Righa Kharwang (Baglung) 33 kV Transmission Line Project**
- **Lekhnath Distribution Line Rehabilitation project.**

Butwal Regional Office

Operational highlights

There are 9 Distribution Centers under Butwal Regional Office (BuRO) spread over Lumbini zone. The distribution loss of BuRO is 16.39%. Sales contribution to NEA system from this RO is 13.75%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –518419

Revenue (million) – Rs.4031.31

Numbers of consumers –373334

Project highlights

The major projects being implemented under this regional office are as under.

Thada 33 kV Substation Project

The project scope includes construction of 22 km 33 kV line and 33/11 kV, 6/8 MVA substation at Thada, Arghakhachi. Purchasing of land has been completed

for the construction of Thada Substation. Polling works in about 10 km line length for 33 kV line is complete. The project is scheduled to complete in FY 2016/17.

Bojhapokhari Nawalparasi 33 kV Transmission Line Project

The project scope includes construction of 15 km 33 kV line, 10 km 11 kV line, 10 km of distribution line and construction 33/11 kV, 6/8 MVA substation at Bojhapokhari of Nawalparasi district. Polling works in about 10 km line length for 33 kV line is complete. The project is scheduled to complete in FY 2016/17.

Other Projects

The following projects in the region are also in the various stages of execution.

- **Chandrauta-Maharajgunj (Kapilbastua) 33 kV** Transmission line and Substation Project
- Majua (Gulmi) 33 kV Substation Project
- Amarai-Dohali-Wagla-Aglung(Gulmi) Electrification Project
- Purkotdaha-Mayalpokhari Bajhakateri Electrification Project

Nepalgunj Regional office

Operational highlights

There are 13 Distribution Centers under Nepalgunj Regional Office (NRO) spread over Rapti, Bheri and Karnali zones. The distribution loss of NRO is 17.93%. Sales contribution to NEA system from this RO is 6.28%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) –235157

Revenue (million) – Rs.1881.81

Numbers of consumers –260504

Project highlights

The major projects being implemented under this regional office are as under.

Surkhet Bijaura 33 kV Substation Project:

The project scope includes construction of 30 km 33 kV line, 20 km 11 kV line and construction of 33/11 kV substation at Bijaura, Surkhet. Land acquisition work and construction of boundary fencing wall has been completed, erection of more than 170 Pole on the way to substation has been completed and procurement of goods and installation and erection of line materials is in progress.

Dang Bhalubang 33 kV Transmission Line Project

The project scope includes construction of 25 km 33 kV line, 10 km 11 kV line and construction 33/11 kV substation at Bhalubang. Process has been initiated for land acquisition

Rajapur 33 kV Substation Project

The project scope includes construction of 15 km 33 kV line, 10 km 11 kV line, 10 km of distribution line and construction 33/11 kV substation at Rajapur, Bardiya. Land acquisition work for S/S has been completed and construction of boundary fencing wall is on progress. Contractor is obliged to complete the work within F/Y 2016/17.

Sitalpati -Musikot 33 kV Transmission Line Project

The project includes the construction of 50 km of 33 kV transmission line, 50 km of 11 kV line, 40 km of LV distribution line and one 33/11 kV substations of 3 MVA capacity at Musikot and another 33/11 kV substations of 1.5 MVA Sitalpati . Out of 50 km long 33 kV transmission line, stringing of 34 km line & pole erection has been completed. Construction of 33/11 kV, 1.5 MVA substation at is completed and for contstruction of 33/11 kV substations of 3 MVA capacity at Musikot contract has been done Project work is in progress after Contract agreement and expected to be completed by FY 2016/2017.

Chhinchu-Rakam-Jajarkot 33 kV Transmission Line Project

The scope of the project consists of the construction of 70 km of 33 kV transmission line, 100 km of 11 kV, 100 km of LV distribution line and two 33/11 kV substations at Surkhet and Jajarkot districts. Out of 70 km long 33 kV transmission line, pole erection and stringing of conductor for 45 km and 11 km of 11 kV line has been completed. Project work is in progress and expected to be completed by FY 2015/16.

Ghorahi-Holeri 33 kV Transmission Line Project

Scope of this project consists of the construction of 45 km of 33 kV transmission line, 50 km of 11 kV, 50 km of LV distribution line and two 33/11 kV substations at Holleri & Ghorahi. Construction of 45 km 33 kV transmission line up to Holleri has been completed. 33/11 kV, 750 kVA sub-station at Holleri is now in operation from FY 2013/14.

Dailekh Substation Project

The project includes the construction of 15 km of 33 kV, 25 km of 11 kV, 25 km of LV distribution line in Salyan & Rolpa districts & 6/8 MVA 33/11 kV substation at Koilachaur & a switching substation at Kapurkot. Construction of 33 kV transmission line from Kapurkot to Kalachaur has been completed. Land acquisition for substation construction has been completed. Project work is in progress after Contract agreement and expected to be completed by FY 2016/2017.

Kapurkot-Koilachaur 33 kV Transmission Line Project

The project includes the construction of 15 km of 33 kV, 25 km of 11 kV, 25 km of LV distribution line in Salyan & Rolpa districts & 6/8 MVA 33/11 kV substation at Koilachaur & a switching substation at Kapurkot. Construction of 33 kV transmission line from Kapurkot to Kalachaur has been completed. Land acquisition for substation construction has been completed. Project work is in progress after Contract agreement and expected to be completed by FY 2016/2017.

Badikot-Bijuwar Distribution System Rehabilitation Project:

The Project includes the replacement of wood pole, upgrading of Conductor size and Transformer . Project work is on progress after Contract agreement and expected to be completed by FY 2015/16.

Pyuthan Substation Project

The project includes the construction of 3 MVA 33/11 kV substation at Damti ,Pyuthan. Land acquisition for substation construction has been completed. Project work is on progress after Contract agreement and expected to be completed by FY 2016/2017

Dailekh-Seri Line Extension Project

The project includes the construction of 5 km 11 kV line , 10 km of LV distribution line in Dailekh disrrict . Project work is on progress after Contract agreement and expected to be completed by FY 2015/16.

Attariya Regional office

Operational highlights

There are 8 Distribution Centers under Attariya Regional Office (ARO) spread over Mahakali and Seti zones. The distribution loss of ARO is 9.49%. Sales contribution to NEA system from this RO is 3.93%. The performance highlights of this regional office during review period are as under.

Energy sales(MWH) – 147173

Revenue (million) – Rs.1034.54

Numbers of consumers – 166318

Project highlights

The major projects being implemented under this regional office are as under.

Khorpe (Baitadi) Chainpur(Bhajang) 33 kV Transmission Line Project

The scope of this Project includes the construction of 90 km of 33 kV, 40 km of 11 kV, 40 km of LV distribution line in Baitadi and Bajura district , 33/11 kV substations at Chainpur and 33 kV bay extension at Baitadi Substation. Tendering has been done for poles for construction of

additional 10 km 33kV line. Land Acquisition process for Sub-station construction has been initiated.

Martadi (Bajura)-Gamgadi (Mugu) 33 kV Transmission Line Project

The project includes the construction of 90 km of 33 kV, 40 km of 11 kV, 40 km of LV distribution line in Bajura and Mugu district, 33/11 kV substations at Martadi and 33 kV Bay extension at Saphebagar. The project is facing hurdles due to long route, difficult terrain and insufficient budget allocation.

Saphebagar(Achham)-Martadi (Bajura)33 kV Transmission Line Project

The project includes the construction of 48 km of 33 kV, 40 km of 11 kV, 40 km of distribution line in Achham and Bajura district , 33/11 kV substations at Martadi and 33 kV Bay extension at Saphebagar. construction Of 12 kV transmission in progress. Procurement of conductors and insulator hardware for 33 kV transmission line has been completed. Process of land acquisition has been initiated.

Dadeldhura-Baitadi 33 kV Transmission Line Project

The scope of the project includes the construction of 14 km of 33 kV transmission line, 15 km of 11 kV & LV distribution line, one 33/11 kV 3 MVA substation at Baitadi and 33 kV bay extension in the existing Dadeldhura substation. Construction of 33/11 kV, 3 MVA substation is complete and is in operation. However construction of 11 kV feeder to fully utilize the substation capacity is still left.

Other Projects

The following projects in the region are also in the various stages of execution.

- Balanch-Khalanga 33 kV Transmission line Project
- Pahalmanpur-Joshipur 33 kV Transmission line and Substation Project
- Mauwa-Nagardaha (Doti) 33 kV Transmission line and Substation Project
- Sanphebagar-Chamara-Chautara 33 kV Transmission line and Substation Project
- Budhar-Jogbudha Bagarkot 33 kV Transmission line and Substation Project
- Chandani Substation Project
- Chaumala Substation Expansion Project
- Dhangadi-Attaria Distribution System Reinforcement Project
- Mahendranagar Distribution System Reinforcement Project
- Dipayal-Sanphe-Manma-Jumla 33 kV Transmission line and Substation Project
- Tikapur-Lamki Distribution System Reinforcement Project

Disaster Management after Earth Quake :-

A powerful 7.8 Richter scale earthquake jolted the country on April 25, 2015, continuous access of electricity was impossible within the country after such a big disaster. Nepal's main electricity provider--the state-owned Nepal Electricity Authority-- providing service to many cities and rural areas of the country where the service is available, delay in disaster management means 30 million people of Nepal to face lengthy outages.

In the aftermath of the earthquake, access to reliable electricity has diminished and suddenly the amount of light emitted by towns and cities in Nepal changed before and after the earthquake for both urban and rural areas. There were widespread power losses after the earthquake. The cities of Kathmandu, Bharatpur, and Hetauda were hit particularly hard.

"Having collected information about the power outage

from different places of Kathmandu and other places. The working team of Nepal Electricity Authority moved at different places to restore the electricity. On the same day of disaster, major area e.g. Singh Darbar , pulchowk area, hospitals and few central areas of Kathmandu were lighted and with continuous effort we could restore the electricity in Kathmandu by 21st may and at other places than Kathmandu by 29th May because rural areas were particularly valuable because the working teams have had a great deal of trouble getting to and assessing. In spite of the difficulties we restored the electricity on due date which we committed before the media and the people of the country. This effort of lighting the country on due time committed by NEA were widely appreciated by media and people of the country and hence different newspapers and TV channel said " Nepal electricity Authority is No 1 in disaster management after Earth ake."



NEA Staff getting ready for service restoration after April, 2015 Earthquake



NEA Staff at work for services restoration after April, 2015 Earthquake

Annex -1: Features of eight regional offices

S.N	Category	Biratnagar	Janakpur	Hetauda	Kathmandu	Pokhara	Butwal	Nepalgunj	Attaria	Total
No. of Consumers (Nos) for F/Y 2014/15										
1	Domestic	451,638	389,497	309,328	560,075	2,36,251	357,966	241,792	157,871	270,4418
2	Non-Commercial	2,449	1,723	1,426	3,050	1,744	2,448	2,373	1,573	16,786
3	Commercial	2,205	1,343	1,688	5,334	1,469	1,675	1,434	873	16,789
4	Industrial	6,036	7,483	6,377	8,714	3,233	5,330	3,202	1,602	41,977
5	Water Supply	117	36	157	354	198	236	91	41	1230
6	Irrigation	28,599	14,630	14,393	953	278	4,166	10,955	3,708	77,682
7	Street Light	577	421	398	776	63	315	127	43	2,720
8	Temporary Supply	40	41	74	465	15	24	48	23	730
9	Transport	0	0	1	40	2	0	0	0	43
10	Temple	750	324	518	539	534	876	402	250	4,193
11	Community Sales	110	101	70	108	466	202	123	288	1,468
12	Internal Consumption	121	86	132	141	53	95	57	46	731
13	Bulk Supply	0	0	0	0	0	1	0		1
Total		492,642	415,685	334,562	580,549	244,306	373,334	260,604	166,318	286,8000
Sales Unit (MWh) for F/Y 2014/15										
1	Domestic	238,236	194,012	181,161	565,573	132,554	195,134	114,994	76,486	1,698,150
2	Non-Commercial	14,310	4,383	12,755	68,293	9,799	7,582	7,146	4,204	128,472
3	Commercial	29,200	10,212	23,694	167,498	21,984	19,571	15,149	9,257	296,565
4	Industrial	259,512	86,243	471,966	136,780	21,957	262,853	77,819	20,544	1,337,674
5	Water Supply	8,941	1,658	6,667	14,588	2,825	8,071	2,686	1,207	46,643
6	Irrigation	12,769	4,678	8,555	475	156	3,992	5,321	1,813	37,759
7	Street Light	6,569	14,416	20,572	23,332	2,647	5,075	2,637	1,871	77,119

8	Temporary Supply	52	108	146	743	43	55	92	288	1,527
9	Transport	0	0	602	5,609	21	0	0	0	6,232
10	Temple	729	251	417	1,557	385	991	398	150	4,878
11	Community Sales	8,943	5,221	4,758	6,049	29,085	7,937	8,730	31,162	101,885
12	Internal Consumption	425	327	833	1,135	195	378	185	191	3,669
13	Bulk Supply	0	0	0	0	0	3,180	0	0	3,180
	Total	579,686	321,509	732,126	991,632	221,651	514,819	235,157	147,173	3,743,753
Revenue (Million NRs) for FY 2014/15										
1	Domestic	1,857,210	1045,594	1,512,125	4,994,978	1048,094	1,488,415	888,963	572,852	13,408,231
2	Non-Commercial	160,358	53,538	141,641	818,342	114,509	91,369	116,074	50,199	1,546,030
3	Commercial	359,895	127,863	290,145	1,947,842	269,262	237,255	183,080	110,656	3,525,998
4	Industrial	2,062,477	708,715	3,463,276	1,182,080	198,194	2,040,885	592,629	167,837	10,416,063
5	Water Supply	54,369	12,193	42,741	96,027	19,232	53,887	18,297	8,602	305,348
6	Irrigation	47,865	18,009	33,286	1,850	0,627	14,408	19,669	6,654	142,368
7	Street Light	49,009	90,390	164,901	200,699	23,753	34,127	21,719	17,088	601,686
8	Temporary Supply	.967	0.579	12.132	14.870	0.754	1.014	1.354	3.855	25.525
9	Transport	0.00	0.00	5.295	34.217	0.304	0.00	0.00	0.00	39.816
10	Temple	3,941	1,294	2,118	8,797	1,903	6,645	2,054	0,726	27,478
11	Community Sales	37,253	19,290	20,174	22,715	115,479	29,990	35,961	93,734	374,596
12	Internal Consumption	4,994	3,596	8,616	13,849	1,953	2,602	2,010	2,343	39,963
13	Bulk Supply	0.00	0.00	0.00	0.00	0	30,718	0.00	0	30,718
14	Black Listed	0.00	0.00	0.00	0.00	0	0	0	0	0
	Total	4638,308	2081,061	5686,450	9335,906	1794,064	4031,315	1881,810	1034,546	30483,460
Loss percentage										
1	Received Energy, MWH	709971	447842	888045	1133294	256324	615739	286529	162596	4500340
2	Sales Energy, MWH	579686	321509	732126	991632	221651	514819	235157	147143	3743753
3	Loss Unit, MWH	130285	126333	155919	141662	34673	100920	51372	15453	756617
4	Loss percentage	18.35	28.21	17.56	12.5	13.53	16.39	17.93	9.5	16.81

Annex- 2: Performance Status of Eight Regional Offices

Description	Biratnagar		Janakpur		Hetauda		Kathmandu		Pokhara		Butwal		Nepalgunj		Attaria		Total
	Mechi & Koshi	Jankapur & Sagarmatha	Narayani	Bagmati & Janakpur	Gandaki & Dhaulagiri	Lumbini	Bheri ,Karnali & Rapti	Mahakali& Seti									
No .of municipalities fully electrified	11	10	12	13	9	14	3	2	74								
No .of municipalities partially electrified	17	11	4	4	1	10	9	16	2,846,061								
No.of VDCs fully electrified	31	392	181	175	180	121	55	2	1137								
No.of VDCs partially electrified	298	217	131	270	33	239	225	134	1352								
No. of VDCs having no access to electricity	134	97	3	50	64	30	169	99	646								
No. of community electrified VDCs	26	31	7	60	75	53	9	245	506								
No. of distribution center	15	11	8	17	10	9	13	8	91								
Units sold during the year under review (GWh)	577.28	319.10	729.72	989.22	219.24	512.41	232.75	144.77	3724.50								

Revenue(NRs in million)

Description	Biratnagar	Janakpur	Hetauda	Kathmandu	Pokhara	Butwal	Nepalgunj	Attaria	Total
Billing Amount	4579.93	2048.94	5617.31	9315.37	1764.887	3979.17	1851.73	1013.16	30170.86
Collection amount	4434.56	1892.74	5503.82	9140.67	1675.48	3905.32	1757.32	929.64	29239.55
Total no of consumer at the end of year	489,899	412,942	331,819	577,806	241,563	370,591	257,861	163,580	2,846,061
Number of additional bill	34	25	15	6	12	56	24	10	182
Amount recovered from additional bill	32.6	1.3	3.4	1.8	1.6	5.83	0.8	0.7	48.03
No of Black listed consumer	4732	3695	6389	9351	1486	3337	2453	161	31604
Revenue to be collected from Black listed consumer	84.9	83.19	151.0	200.7	12.14	85.0	31.20	3.07	651.2
Revenue collected from Black listed in consumer no.	283	92	340	250	34	335	26	2	1362

Annex -2: Performance Status of Eight Reginal Offices

Revenue collected from blacklisted consumer	7.08	3.4	16.05	8.5	1.2	5.3	1.6	0.2	43.33
Number of line disconnection	4350	5166	8640	7600	1128	7714	4383	1596	40577
Revenue to be collected from disconnection	65.06	107.35	290.06	102.06	13.71	132.00	86.70	16.03	812.97
Revenue collected from disconnection	41.06	64.10	120.03	96.03	14.23	77.00	20.06	8.6	441.11
Action against theft	40	539	602	208	160	314	1047	4	1971
Collection from action against theft	0.12	4.05	3.20	3.7	1.08	2.41	0.68	0.1	15.31
Loss Reduction Activities									
Meter change	181	964	1250	1564	1452	1458	1002	410	8381
Rescaling	1851	1647	5560	6012	3625	3265	2500	2569	27029
Conductor Upgrading(HT/LT);Km	22	16.3	22	14.23	2.56	26.5	14.6	41.30	159.49
Transformer adding/upgrading nos.	24	105	12	84	65	86	64	8	448
Meter inspection (TOD/Three phase/single phase); nos	3456	2541	4100	1825	1245	1465	1445	2500	18577
Public interaction conducted; nos	5	15	4	19	0	1	12	2	58
Public hearing, awareness, notice published ; nos	10	12	1	12	1	1	6	10	53

Planning, Monitoring and Information Technology Directorate

Planning, Monitoring and Information Technology Directorate, a corporate wing of NEA is headed by Deputy Managing Director. This directorate is entrusted with directing and monitoring the activities of five departments namely, System Planning Department, Corporate Planning and Monitoring Department, Information Technology Department, Power Trade Department and Economic Analysis Department. Each of these departments is headed by a director. System Planning Department is responsible for carrying out load forecasting, generation planning and transmission system planning of power system of Nepal. Corporate Planning and Monitoring Department is concerned with the development of corporate plan of NEA along with monitoring and evaluation of NEA-implemented projects. Information Technology Department develops innovative IT services so as to modernize the various activities of NEA. Power Trade Department is responsible for trading of power both in domestic as well as in international market as per NEA's strategy and policy. Finally, Economic Analysis Department is concerned with financial analysis of projects, proposing electricity tariff and services charges so as to strengthen the financial health of NEA.

System Planning Department

Currently, Grid Impact Study (GIS) for new generation projects is the main focus of System Planning Department (SPD). The GIS analyzes the effect of new connection to NEA Grid to ensure satisfactory operation of the NEA Grid in conformity with the NEA Grid Code; requirement for additional transmission lines, reinforcement in the network, and requirement for the installation of capacitors and reactors are recommended.

SPD completed Load Forecast Study for the FY 2014/15. SPD also identifies constraints in the grid that could pose operational risk and that reduces efficiency due to outages in the Integrated Nepal Power System (INPS). SPD also develops transmission configurations for evacuating power from planned generation projects. For this, different technical studies such as load flow, short circuit, steady and transient stability are carried out.

SPD also assists other departments of NEA by providing necessary data and give suggestions regarding implementation of planned projects. The department is also actively involved in the study of Technical Assistance for Preparing Transmission System Master Plan of NEA

that is being studied by EDF as the consultant. The department is also involved in the Joint Study for the Cross Border Interconnection Master Plan and Trade of Power between India and Nepal that is being studied by Power Grid as the consultant.

In FY 2014/15, System Planning Department carried out number of technical studies at the request of NEA's different departments. Notable among them are:

Load flow study of Inaruw – Biratnagar transmission line and substation.

Load flow study of Garjang – Khimti 132kV transmission line.

Grid Impact Study of PV Grid tied Solar Farm

Energy simulation of Power Purchase Agreement and Grid Impact Study completed projects.

Power Evacuation Study of Upper Marsyangdi A (50 MW).

Short circuit analysis of Ilam-Phidim and Kabeli substation.

In FY 2014/15, System Planning Department completed Grid Impact Study for the following hydropower projects to be developed by the private sector.

List of GIS conducted projects in FY 2014/15

S.N.	Name of Projects	Capacity (MW)	Connection Substation
1	Lower Solu HPP	82	Tingla substation.
2	Phalankhu Khola HPP	5	Trishuli 3B substation.
3	RukumGad HPP	5	Musikot substation.
4	Marsyangdi Besi HPP	50	Udipur substation.
5	Kabeli HPP	37.6	Pinaseghat substation.
6	Lower Modi II HPP	10.5	Lower Modi I HPP switchyard.
7	Upper Madi HPP	25	Leknath substation.
8	Ruru Banchu-I HPP	13.5	Dailekh substation.

9	Bijayapur II HPP	4.5	Bijayapur I HPP switchyard.
10	Istul Khola Small HPP	1.506	Salyantar substation.
11	Trishuli 3B HPP	42	Trishuli 3B substation.
12	Upper Rawa Khola Small HPP	2.8	Baksila substation.
13	Upper Dordi A HPP	25	Udipur substation.
14	Upper Mailung A HPP	6.44	Trishuli 3B substation.
15	Nilgiri Khola HPP	38	Dana substation.
16	Middle Tamor HPP	54	Hangpang subststion.
17	Rele Khola Small HPP	6	Dana substation.
18	Trishuli Galcchi HPP	75	New Marsyangdi substation.
19	Likhu- I HPP	51.4	Likhu Khola "A" HEP switchyard.
20	Taksar Pikhua Khola HPP	8	Bhojpur substation.
21	Saptang Khola Small HPP	2.5	Trishuli 3B Hub.
22	Daram Khola HEP	7.3	Harichaur substation.
23	Lower Selang Khola HPP	1.5	Chautara substation.
24	Upper Lapche Khola HPP	55	Singati substation.
25	Liping Khola HPP	16.26	Upper Chaku A HPP switchyard.
26	Nuagad Small HPP	1	Balanch substation.
27	Upper Mardi Khola HPP	7	Banskot (Hemja) substation.
28	Sano Milti Khola HPP	3	Kirnetar substation.
29	Mai Beni HPP	9.008	Godak substation.

In FY 2014/15, System Planning Department completed Grid Impact Study for the bulk load of following industries.

S.N.	Name of Projects	Capacity (MVA)	Connection Substation
1	Subhashree Agni Cement	7.5	Lamahi substation.
2	HID	6	Hetauda substation.
3	Samrat Cement	12	Lamahi substation.
4	Reliance Spinning Mills	10	Khanar substation.

Corporate Planning and Monitoring Department

Corporate Planning and Monitoring Department is responsible for developing corporate and periodical development plans and programs, for carrying out periodical monitoring and evaluation of projects implemented by NEA, and for assisting the National Planning Commission, Ministry of Energy and Ministry of Finance in the preparation of annual budget and programs for energy projects being undertaken by NEA. Besides, the Department also provides necessary support to NEA management for carrying out various studies related to institutional reforms and development. In addition, the Department also provides input for studies undertaken by various organizations on topics related to NEA.

The Department also plays coordinating role in the development of hydropower projects under different financing mode. During the year under review, the Department collected, evaluated and reviewed monthly, trimester and annual progress of 165 development projects implemented by various business groups and corporate offices of NEA. Of these 165 projects, 9 projects were feasibility study of storage, medium and large hydropower projects; 6 projects were hydropower projects under construction; 49 projects were transmission line projects; 82 projects were distribution system expansion and rural electrification projects and the rest included rehabilitation and maintenance of hydropower stations , institutional strengthening projects and Renewable capacity expansion projects.

Information Technology Department

Information Technology Department is responsible for IT-related activities within the organization and is headed by a Director. The Department has completed a very productive year with the introduction of new ICT (Information and Communication Technology) solutions and expansion of networking infrastructure. Apart from the implementation of newer IT services, the Department provided continuous ICT maintenance / support and training at local and regional level. To make the procurement system of NEA transparent, the Department posted more than 658 tenders through its portal in this fiscal year. NEA procurement system portal now has a total of 1166 registered active bidders and this is a significant increase in comparison to last year. The Department has also made significant progress in the area of Intranet expansion with fiber optics cable and wireless connectivity. The offices under Distribution and Consumers Services (DCS) such as Naxal, Kuleshwor, Koteshwor, Bhaktapur, Thimi were linked to the central office network last year and have initiated any-branch-payment system service within Kathmandu valley. The department has been constantly facilitating this process and as continuity in supporting the any-branch-payment system the network was extended to Birgunj in this fiscal year.

A DCS Activities Information System - web portal was made operational this year with the aim to capture overall DCS activities including revenue collection, line connection/disconnection details, leakage, accidents & electrocution etc. The site is accessible through the NEA intranet site (www.nea.org/revenue) and the website <http://nea.org.np/revenue/>. More than 80 DCS centers are regularly using this portal. Moreover, to monitor the reporting part, the report status of every branch offices has been incorporated into the portal to show daily report status of distribution centers. Detail report from distribution centers is available in printable format in web portal for further management purpose.

Considering training as an integral aspect of carrier development and to enhance the efficiency of the staff, the Department conducted several training courses at corporate office level. A total of 4 training sessions were conducted with a total participant count of 60. Other noteworthy activities carried out by the department in this fiscal year are implementation, support and maintenance of the e-attendance system in more than 70 offices. The department has also initiated the additional new implementation of this system in more than 60 additional offices at NEA. By the end of the next fiscal year this system would have been implemented in more than 150 NEA offices throughout the country.

The testing of document management system has been completed and the department has started implementation of the system. In the first phase the system will be implemented in Legal and Project development departments within the central office and full-fledged use of the system will be monitored. Later the implementation will be extended to other regional offices as well. The Department has also completed a computer hardware procurement process for new roll out of e-attendance system and for replacement of old machines running CAIS. In addition to the regular procurement process, the department also initiated and completed the procurement of 56 sets of e-attendance devices and computer sets in this fiscal year. Furthermore, continuous support was provided to offices with accounting, inventory, payroll and other IT systems. Constant up gradation of the in-house built software Payroll and e-attendance system has been done. The Asset Management System was developed and implemented in the DCS offices at Thimi, Pulchowk, Ramechhap and Humla for further testing of the system. The system is successfully running in the mentioned offices and larger implementation of the system is being carried out in co-ordination with the Finance Directorate office. The department initiated the implementation of SMS Bill Payment System in NEA to facilitate the remote users pay their electricity bills. Conceptual design and prototype was made. Formal demonstration of the prototype was successfully presented and widely accepted by the top-level management of NEA. A dedicated team of engineers are working on this project for the department.

Lastly the department has initiated the security assessment of MPower billing system at Kuleshwor DCS. This would help us to find and rectify any existing security issues related to the application side of the system.

Power Trade Department

Power Trade Department is responsible for trading of electric power in both domestic and cross border market. It is the single window interface of NEA with Independent Power Producers (IPPs) for processing their application for Power Purchase Agreement (PPA). Functions of Power Trade Department may be broadly classified into three categories:

- PPA Processing and Signing:
It covers PPA processing activities up to and including its signing.
- PPA Implementation and Monitoring:
It includes PPA administration after its execution till commercial operation.

➤ Operational Administration and monitoring of PPAs:

It includes PPA administration after commercial operation.

The Department has 3 Divisions to carry out these functions. Various reform measures have been introduced in the Fiscal Year under review so as to make the processing of the PPA applications systematic and transparent. The applications are put on a processing sequence based on pre-established criteria and published in its notice board. The different stages involved are document study and investigation, technical review, Connection Agreement followed by Grid Impact Study and PPA draft preparation and negotiation. Finally, a PPA Processing Basket is formed and the applications which have fallen into it with the completion of necessary criteria are processed ahead towards the execution of PPAs. When the earlier entries get completed, the Basket is periodically updated.

A total of 6 new projects developed by the Independent Power Producers (IPPs) with their combined capacity of 42.118 MW were commissioned in FY 2014/15. Projects that were commissioned are: Upper Puwa Khola-1 (3 MW), Jiri Khola (2.2 MW), Mai Khola (22 MW), Upper Hugdi Khola (5 MW), Andi Khola ater upgrading (9.4 MW) and Belkhu (0.518 KW). With these 6 projects, the total number of IPP-owned projects that are in operation has reached 44 with their combined installed capacity of 292.818 MW. Similarly, 83 projects of IPPs with their combined capacity of 1521.28 MW are under construction. Likewise, 33 projects of IPPs with their combined capacity of 542.532 MW are in other stages of development.

During FY 2014/15, 23 new PPAs with their combined capacity of 442.406 MW were concluded. With this, the total number of PPAs concluded so far till FY 2014/15 has reached 160 with their combined capacity of 2356.63 MW.

The Power in the quantum from 15 to 35 MW was imported under a short term PPA with Power Trading Corporation of India (PTC) Ltd. from Tanakpur point at 132 kV level in the Fiscal Year 2014/15. Besides, a long term Power Sale Agreement (PSA) has already been signed with PTC India for the import of 150 MW power for 25 years through 400 kV Dhalkebar-Mujaffarpur transmission line.

Economic Analysis Department

Economic Analysis Department headed by a Director is one of the five departments under Planning, Monitoring and Information Technology Directorate of Nepal Electricity Authority. The department is mainly responsible for conducting the activities related with financial and economic analysis of NEA. More specifically, the department is assigned with following responsibilities;

- Formulate criteria for economic and financial analysis of NEA's projects;
- Financial/ economic, commercial and market analyses of NEA;
- Cost benefit analyses of NEA projects;
- Prepare Log Frame of generation and transmission line projects of NEA;
- Cost analysis of electricity services distributed by NEA;
- Prepare documents for review of electricity tariff to be submitted to Electricity Tariff Fixation Commission (ETFC);
- Carry out comparative benefit study of hydropower generation and transmissions lines of NEA;
- Carry out study and evaluation on economic and financial sustainability of completed projects by NEA;
- Assist the departments of NEA in prioritizing the selected projects.

The department is the focal point of NEA to coordinate with Electivity Tariff Fixation Commission (ETFC). The department also supports to Power Trade Department in concluding PPA with IPPs.

NEA has filed a proposal to Electricity Tariff Fixation Commission (ETFC) for upward adjustment of 20% on existing tariff structure in FY 2012/13. Recently, a presentation was made to the Electricity tariff Fixation Commission (ETFC) at Department of Electricity Development (DoED) on July 02, 2015.

Engineering Services Directorate

Engineering Services Directorate is entrusted with the responsibility to carry out engineering studies beginning from the identification to detailed engineering design, environmental studies, geological and geotechnical studies. It is headed by a Deputy Managing Director. The Directorate has rendered its services to NEA and private sector particularly for the study of hydropower and transmission line projects. The Project Development Department, Soil Rock and Concrete Laboratory, Environmental and Social Studies Department, Dudhkoshi Storage Hydroelectric Project and Electromechanical Design Division through Central Workshop, Hetauda and Concrete Pole Plants at Amlekhgunj and Kotre, provide these services to various departments within NEA and to the private parties. Likewise, Training Center is one of the important departments of Nepal Electricity Authority, under Engineering Services Directorate. It has been enhancing the skills and knowledge to the staffs of NEA as well as Nepalese citizens since 2046 B.S.

Dudhkoshi Storage Hydroelectric Project

The Dudhkoshi Hydroelectric Project is a storage type hydropower project located at border of Khotang and Okhaldhunga districts on the Dudhkoshi River in Eastern Development Region of Nepal. The project was initially identified during the Master Plan Study on the Koshi River Basin in 1985 and the feasibility study was carried out by Nepal Electricity Authority (NEA) in 1998. The feasibility study of Dudhkoshi Hydropower Project was carried out for 300 MW installed capacity and was identified as the viable and attractive option and recommended for the development. The Nationwide Master Plan Study on storage type Hydroelectric Power development in Nepal conducted by JICA in 2014 has identified and selected 10 most promising storage projects for development. Dudhkoshi is the top ranking project among 10 storage projects.

The Dudhkoshi project site is located approximately 5 km northwest of Lamidanda airport, which is about 160 km east of Kathmandu. There is no motorable access at dam site and powerhouse site at present. However, gravel roads and fair weather roads are available within the vicinity of the project area. Ghurmi, a market center located at the Middle Hill road is the nearest road junction for this area. The middle hill road continues towards east connecting Halesi, Diktel etc. Regular public transport service to Diktel, the head quarter of Khotang district and Okhaldhunga, the district headquarter of Okhaldhunga district are in operation from Kathmandu and Katari via

Ghurmi. The dam site can be accessed from a 20 km long fair weather road that branches from Ghurmi – Diktel part of Middle Hill road. The dam site can also be accessed by other fair weather road from Okhaldhunga. Nearest road head for proposed powerhouse site is located at Dhitung village which is about 8 km from powerhouse site. A fair weather road that connects Dhitung village to the main road to Diktel is about 11 km long.



Photo (from left): Member of Constituent Assembly Mr. Bishal Bhattari, Honorable Energy Minister Radha Kumari Gyawali, Honorable Vice President of UML and member of Constituent Assembly Mrs. Bidhya Bhandari, Member of Constituent Assembly, Mr. Panch Karna Rai along with Acting D.M.D. Engineering Services Directorate Mr. Lila Nath Bhattarai at the Dudhkoshi Dam site



Photo: ADB Project Implementation Specialist, Principal Energy Specialist Mr. Priyantha D.C. Wijayatunga together with the project director Mr. L.N. Bhattarai & coordinator of ADB projects in NEA Mr. Surendra Rajbhandari visiting the Dudhkoshi Site

Honorable Energy Minister and Chairperson, Nepal Electricity Authority Radha Kumari Gyawali and Honorable Vice President of UML and member of Constituent Assembly Mrs. Bidhya Bhandari have visited the Dam site of Dudhkoshi Storage Hydroelectric Project, Rabuwa Bazar, Khotang. Honorable Energy Minister Radha Kumari Gyawali had assured full support to the project for the early implementation and study required for the dam height optimization.

The procurement of consulting services for Updated Feasibility Study and Detailed Design for Dudhkoshi Storage Hydroelectric Project was initiated in the grant

assistance of Asian Development Bank (ADB). The main objective of this study is to prepare the project for implementation from the current status of the existing Feasibility study. The overall objectives of the consulting service are to carry out necessary field investigation; update the existing Feasibility study of Dudhkoshi Storage HEP, carry out detail design, prepare tender documents and tender drawings; prepare Environmental Impact Assessment, Social Impact Assessment, Environmental Management Plan and Construction Plan to meet the NEA, GoN and leading multilateral agencies requirements for construction of the Project.

The Expression of Interests (EOI) for the Consulting Services for the Updated Feasibility Study and Detailed Design of Dudhkoshi Storage Hydroelectric Project was published 19 June 2014 and 22 internationally reputable firms expressed their interests. Six firms from different countries were shortlisted and Request for Proposal (RFP) was issued to the shortlisted firms. All the six shortlisted firms submitted their technical and financial proposal separately on 3rd July 2015. The technical proposals were opened on 3rd July 2015 in the presence of representatives of ADB and Consultants and the financial proposal was placed securely unopened. It is planned that the selection of the Consultant and award of the Contract would be completed in December 2015 and the consulting assignment will begin in January 2016.

The sediment concentration and its sampling are very much important for the reservoir project like Dudhkoshi for the sustainable management of reservoir. On the other hand, the river sediment study helps to estimate the sediment yield, life of the reservoir and energy depletion of storage project due to sediment encroachment of live storage volume. Owing to this, Suspended Sediment Measurement is being carried out by D74 Depth Integrated Sediment Sampler. As part of this, regular suspended sediment measurement is being done at the proposed dam site.



Sediment Sampling at Dudhkoshi river, Rabuwa and Dam site

Project Development Department

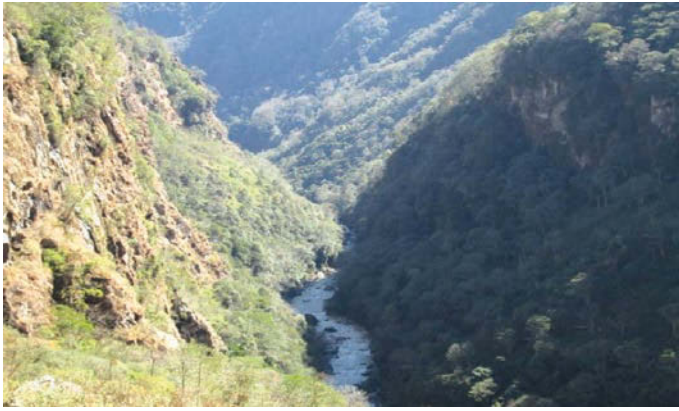
Project Development Department (PDD) looks after the study of hydropower projects at different levels. It is headed by a director. There are six divisions under the department each headed by a manager. The department mainly focuses on the preparation of hydropower projects for development by NEA. This includes identification of projects, their screening and ranking, carrying out their feasibility studies and finally preparing tender documents and detailed drawings through a detailed design study. The department has also been providing construction supervision services for the projects under construction as per the agreements with the concerned project. In addition, PDD has also been providing consulting services for the detailed survey of a number of transmission line projects being carried out by Grid Development Directorate. Brief descriptions of the projects being carried out from this department is outlined in following sections.

Upper Arun Hydroelectric Project

Upper Arun Hydroelectric Project (UHEP) is located in Sankhuwasabha District of Eastern Development Region of Nepal about 700 km East of Kathmandu. The proposed dam site is located in a narrow gorge about 350 m upstream of the confluence with Chepuwa Khola in Chepuwa Village. The powerhouse lies at Sibrung in Hatiya Village, nearby the confluence of Arun River with Leksuwa Khola. The power house lies at the distance of about 32 km from Tumlingtar, the nearest air strip from the project site. The access to the project area starts from "Koshi Rajmarg" which is a national high way to Kimathanka (Chinese Border) and is presently under construction by Government of Nepal (GON). The power house site is just at the other side of the "Koshi Rajmarg" across Arun River. An access road with total length of 24 km will be required to reach headwork site along the left bank of Arun River. The access road will consist of 1.7 km long road tunnel. The power from UAHEP is proposed to be evacuated to national grid from Tumlingtar Hub through 45 km long 220 kV transmission line.

The stretch of Arun River in the project area is the boundary of the buffer zone of Makalu Barun National Park. The right bank of Arun River in this stretch lies within the buffer zone. Except the head works, all the main structures of the project are located on the left bank of Arun River.

Feasibility study of this project on behalf of Nepal Electricity Authority (NEA) in 1991. Now the NEA has given priority for the development of this project as to augment the energy generation capability of the integrated Nepal Power System due to its relatively low cost of generation and availability of abundant firm energy. Based on the feasibility study carried out by



Upper Arun Headwork site

the Joint Venture of Morrison Knudsen Corporation, Lahmeyer International, Tokyo Electric Power Services Co. and NEPECON on 1991, the installed capacity of Peaking Run-of –River type UAHEP is 335 MW. The design discharge of the project is 78.8 m³/sec and generates the firm energy of 2050 GWh per annum. The project consists of 7.8 km long headrace tunnel. The project has design head of 492 m.

Review Study of this project was carried out by NEA in the year 2011. The project cost is revised based on prevailing unit rate and road facilities which is already built up to Num, near the dam site of Arun 3 HEP. The power will be evacuated to the national grid through the transmission hub at Tumlingtar.

The Cabinet of Nepal Government, on 2069/11/04, gave permission to Nepal Electricity Authority to implement UAHEP under the Ownership of the GON. The Department of Electricity Development also informed NEA that issuance of the Survey License to NEA for the Study of UAHEP is not necessary as this project will be implemented by NEA under the Ownership of the GON.

As UAHEP is proposed to be developed by NEA under the ownership of Nepal Government; it will not be possible for the local people to invest on it. Hence, a separate project called Ikhuwa Khola Hydropower Project (IKHEP) has been identified and is proposed to be developed as an integral part of Upper Arun HEP for the social mitigation purpose. The ownership of this project is proposed to be transferred to the local people partly or wholly as per their capacity. IKHEP is located approximately 8 km downstream from the powerhouse site of Upper Arun HEP. The feasibility study of the project is being carried out by the Department of Electricity Development. NEA is planning to develop Upper Arun and Ikhuwa Khola HEP at the earliest possible time. UAHEP is proposed to be developed with the financial assistant of World Bank (WB). Preparation is going on in order to carry out the detail engineering design and the tender document preparation for the construction of the project in coordination with the WB.

The construction of 24 km long access road and camp facilities are proposed to be carried out in parallel with

the detail engineering design. The process for the construction of the project will commence soon after the completion of detail design work. The construction of the project will be completed within 4.5 years. The project is proposed to be completed by FY 2022/23.

The Project site is presently not accessible by motorable road. The nearest accessible point is Num Bazaar. Num Bazaar can be accessed by about 40 km fair-weather road from Khandbari. The powerhouse of the Project is about 25 km from Num. Department of Road, North-South Koshi Road Project (NSKRP) is currently constructing new fair weather road from Num Bazaar to Kimathanka through Gola. The UAHEP will construct a bridge over the Arun River and a 24 km long new access road from powerhouse site near Gola to proposed dam site including 1.7 km of road tunnel. The PDD has been finalizing the EOI and RFP documents required for the consultation services for the project road.

Evaluation of EOI for Consulting Services for Detailed Engineering Design, Tender Document Preparation & Construction Management and Supervision of Hydropower Components of UAHEP and IKHEP is being carried out. RFP documents including Evaluation Criteria for RFP is being prepared. Similarly, EOI document including evaluation criteria for Environmental and Social Impact Assessment (ESIA), Cumulative Impact Assessment (CIA), and Social Planning Studies (SPS) is being carried out.

Upper Modi A & Upper Modi Hydroelectric Project

Upper Modi 'A' Hydro Electric Project was identified during 1997 and the Feasibility study of this project was completed in the year 2000. Environmental Impact Assessment (EIA) of the project was approved in 2004. Presently this project is conceptualized to be developed as cascade scheme between Upper Modi 'A' and Upper Modi HEP with total installed capacity of 62.2 MW (Upper Modi 'A'- 42 MW and Upper Modi - 18.2 MW)

This project is located approximately 250 km west of Kathmandu in Kaski District of Gandaki Zone in the Western Development Region of Nepal. Both the headwork and powerhouse site of the project is located in Ghandruk VDC. The nearest highway to the project site is at Nayapul, about 38 Km west of Pokhara on Pokhara Banglung highway. Approximately 8 km of motorable road and a steel truss bridge over Modi Khola has already been constructed by the local administration. Hence, approximately 8.0 Km of access road need to be constructed from powerhouse of the Upper Modi A to the headwork site. Approximately 1.0 km of project road will be required for the construction of Upper Modi project. Similarly, 8 Km long 132 KV single circuit transmission line will be required to evacuate generated energy from both projects to the INPS system at New

Modi Khola substation.

Upper Modi A and Upper Modi cascade project are conceptualized to be developed in Public Private Partnership (PPP) model. A Joint Development



Upper Modi 'A' Headwork site

Agreement (JDA) was signed between Nepal Electricity Authority (NEA) and Korean Water Resources Corporation (K-Water) with the share holding provision of 60% to NEA, 30% to K- Water and upto 10% to the local residents.

Technical team of NEA and K- Water has completed the joint feasibility study report of cascade project. Detailed engineering design of access road up to the headwork site of Upper Modi 'A' from the existing road head has been completed. Similarly, detailed topographical survey of transmission line has been completed. Supplementary Environmental Assessment study of the Biological environment of the project area has been completed as per the requirements of Ministry of Forest and Soil conservation. Expression of Interest (EoI) are under preparation for Detailed Engineering Design and tender document preparation of this project.

Tamakoshi V Hydroelectric Project

The Tamakoshi-V Hydropower Project is a cascade development of the Upper Tamakoshi HEP with tandem operation. It is located approximately 170 km north east of Kathmandu, the capital of Nepal and approximately 40 km away from the district head-quarter of Dolkha District- Charikot Bazaar. The road connecting Singate



Tamakoshi V Powerhouse Site

Bazaar and Lamabagar for the construction of Upper Tamakoshi HEP passes through both powerhouse and headwork sites of this project. Upper Tamakoshi Project recently built this road.

The feasibility study of the Project was carried out by NEA in fiscal year 2010/11. All the structures of this project are located on the right bank of Tamakoshi River. The project being a cascade development to Upper Tamakoshi HEP, it does not need separate headwork. Tamakoshi-V feeds on the discharge from the tailrace of the Upper Tamakoshi Project through an underground inter connection arrangement, The water is conveyed to the headrace tunnel of the Project. An underground powerhouse is proposed at Suri Dovan. The design discharge of the project is 66 m³/sec with an installed capacity of 87 MW.

The general arrangement of the project comprises of underground inter connection arrangement of headrace tunnel with the tailrace tunnel of Upper Tamakoshi HEP. The interconnection system consists of connecting tunnel, a head pond required to maintain suction head before the pressurized head race tunnel entrance, spillway and spillway tunnel. Discharge from the tailrace of Upper Tamakoshi HEP is diverted through interconnection system and conveyed to 8.20 Km long concrete lined headrace tunnel, 122.38 m high drop shaft, 41.44 m long pressure tunnel and to the underground powerhouse containing four number of vertical axis Francis turbine for the generation of 87 MW electricity equivalent to 460.5 GWh of energy (without Rolwaling). Tailrace tunnel of 141.61 m and 54.55 m long tailrace canal will release the water into the Tamakoshi River itself after the generation of power. The outlet of the tailrace is approximately 0.2 km downstream from the confluence of Tamakoshi River and Khari Khola at Suri Dovan. With the availability of the infrastructure developed for the Upper Tamakoshi HEP particularly the access road and transmission line and also being the cascade project of Upper Tamakoshi HEP, Tamakoshi V HEP can be developed along with Upper Tamakoshi HEP. Hence, the project can be commissioned in five to six years from FY 2070/71 and shall be the milestone project to overcome the load shedding in future.

For the speedy implementation of Tamakoshi V, NEA has initiated the preparatory works for the Detailed Engineering Design in this fiscal year so that the detailed engineering design can be carried out in coming fiscal year. All the necessary activities like additional geological and geotechnical investigation/s, Environmental Impact Assessment (EIA) finalization, finalization of Expression of Interest (EoI) and Request for proposal (RFP) documents for selection of international consultants are being prepared for the detailed engineering design of the project. With regards to the interconnection system, an agreement has been signed between Project

Development Department (PDD) and Upper Tamakoshi HEP for the detailed engineering design and construction supervision of interconnection system. This work will be carried out through the consultant of Upper Tamakoshi HEP. Similarly, the construction of interconnection system will also be executed through the present civil contractor of Upper Tamakoshi HEP.

Presently, the evaluation of EoI for the selection of consultant has been completed and the preparation/finalization of the RFP document are under the process. Similarly, the interconnection design and cost estimation has been completed and necessary process for the construction of interconnection system to function it as a tandem to Upper Tamakoshi HEP, are been carried out.

Andhikhola Storage Hydroelectric Project

Andhikhola Storage Hydroelectric Project is a medium sized storage scheme situated on Andhi khola, a tributary of Kali Gandaki River in the Gandaki Basin. The dam site is located at about 1.6 km upstream of confluence of Kali Gandaki and Andhi Khola whereas, powerhouse site is located on the left bank of Kali Gandaki River, about 12 km downstream of the Kali Gandaki-A HEP powerhouse. The Feasibility Study of this project was carried out by NEA in 1998. As per the study, the project will generate an annual average energy of 693 GWh with



Andhikhola Dam Site

installed capacity of 180 MW. NEA started to upgrade the feasibility study from the year 2010/11 and NEA has applied for survey license of this project in the same year. In the view of further study, altogether four options have been considered.

An alternative study was carried out considering two dam and two powerhouse sites including the old dam and powerhouse site from previous studies (1998). In the fiscal year 2014/15, the Project Development Department prepared the Interim Feasibility Study Report with selection of optimum layout of the project with the project alternatives. The study indicated that the option with old dam site and the powerhouse option from the previous studies are more attractive from economic and geological point of view. Hence this alternative is

recommended for the further study. As per the study, the project will generate an annual energy of 664 GWh with installed capacity of 303 MW with dam height of 193 m and Full Supply Level of 710 m.

Uttar Ganga Storage Hydroelectric Project

The Government of Nepal (GON) has given priority for the development of storage type hydropower projects and accordingly NEA has initiated the "Selection and Feasibility Study of Storage Projects" across the country under funding of GoN. Uttar Ganga Storage Hydropower Project is one of such potential projects, for which NEA has proposed to initiate the feasibility study in the fiscal year 2011/12. The proposed project lies in Baglung District of Dhaulagiri Zone in Western Development Region (WDR) of Nepal. The dam site is located at Gaba village of Nisi VDC whereas the powerhouse site is situated on the left bank of Nisi Khola nearby Karigau Village of Nisi VDC. The earthen track road has been constructed up to Uttar Ganga (Dhorpatan) in this fiscal year. About 11 KM long access road from Uttar Ganga, the nearest road head will be required to reach the dam site. The proposed power house site is accessible by Rukum – Banglung part of Madhyapahadi Highway (Pushpalal Lokmarg). A bridge across the Nisi Khola is needed to be constructed to reach the powerhouse site. In order to continue the feasibility study and further study works e.g. Environmental Impact Assessment, etc an application for the survey license was submitted to DoED in the fiscal year 2011/12. As the dam and reservoir area of the project are located within Dhorpatan Hunting Reserve, pre-approval is required from Ministry of Forest and Land Conservation for conducting the feasibility study. Though the application for the same has been submitted, approval from the Ministry has not been received yet. However, the third meeting of Project Facilitation Committee under the office of Prime Minister and Cabinet chaired by the Chief Secretary on April 29, 2013 decided to prepare the Detailed Project Report (DPR) and Environmental Impact Study of the project. Accordingly, NEA has again made a request to DoED for the survey license of generation submitting the required additional license fee.



Reservoir Area & Uttar Ganga River of Uttar Ganga Storage HPP

Major components of the project are 145 m high rock fill dam, sloping type intake, 9,800 m long headrace tunnel, circular restricted orifice surge shaft, 3,900 m long inclined pressure shaft and horizontal tunnel and an underground powerhouse on the left bank of Nisi Khola. The installed capacity of the project has been computed as 300 MW on basis of 18 hours in dry season (November-May) and 6 hours in wet season (June-October) operation. The annual energy generation from the project after outage and losses will be 1,269.4 GWh of which the firm energy (all dry season energy from November to May and peak wet season energy from June to October) is 1,252.0 GWh and the secondary energy (off peak wet season energy from June to October) is 17.4 GWh. Energy generated from the project will be evacuated to the INPS at the proposed Kusma sub-station through 85 km long 220 kV transmission line. The distinct features of the project are as follows:

- Availability of very high effective head of up to 1,310 m making the project very cost effective;
- High Run Off Capacity Factor (RCF) of 62% facilitating much flexibility in reservoir operation;
- Less sediment yield of 2,750 t/km²/year thereby increasing the life of the reservoir;
- Inundation of only 250 ha of cultivated land and resettlement of 260 households thus having comparatively less socio-environmental impacts.
- Total cost of the project has been updated as US\$ 775 million at the price level of June, 2013 excluding interest during construction (IDC) and other financial costs. The economic indicators EIRR of 12.91 and B/C of 1.30, as well as financial indicators FIRR of 15.2 and B/C of 1.16 shows that project is viable for development.

During the fiscal year 2014/15, the following works have been carried out:

- Topographical survey of proposed power house site, dam site and intake site.
- Field hydrological works including new gauge installation at Kanga Village (near to dam site), discharge measurement at both dam site & power house site and gauge reading continue at both dam site & power house site.
- Geological study included geological mapping of the dam site, intake site, surge tank area and power house site.
- Stake holders' meeting at Burtibang and Public Hearing at Bobang and Nishi for creating congenial environment at the project site.

Tamor Storage Hydroelectric Project

Tamor Storage Hydropower Project lies in Terhathum and Panchthar districts of Eastern Development Region.

The Project was identified during the Koshi River Basin Master Plan Study, 1985. Further studies on the project started only in 2009, after about 25 years of its identification. The Project is in its initial stage of study. The Project site can be accessed via. Biratnagar – Dhankuta- Myanglung black topped road.

An earthen track of about 25 Km connects Myanglung to Lambhughat which is located at about 1.5 Km upstream of the proposed dam site. Being a reservoir project with seasonal storage capacity and suitably located to cater the energy hungry industries of Eastern Development Region, this is one of the promising storage projects being studied by Project Development Department.

During Fiscal year 71/72, Project Development Department started the feasibility study of the project. In this year, the 1st stage of the feasibility study, the final layout of the project component was finalized.



Project Area

The Geotechnical investigation which includes ERT, Geological mapping of project area was carried out. Similarly a drill hole was drilled at the diversion inlet of the project area. The hydrological study was being carried out. The design of project components is going on and planned to complete in the coming fiscal year. PDD has planned to complete the feasibility study in the fiscal year 73/74.

Identification and Feasibility Study of two new medium sized hydroelectric Projects

To solve the current power crisis and enhance the energy network system of the country, Government of Nepal decided to identify and develop new hydropower projects. For this purpose, the Government of Nepal allocated budget under the title of "Identification and Feasibility study of Two New Medium Sized Projects". To implement the Project, a technical team of Project Development Department conducted a desk study of different projects and finalized two new projects namely

as Upper Bheri Hydroelectric Project with preliminary capacity of 85 MW and Chainpur Seti Hydroelectric Project with preliminary capacity of 140 MW.

Upper Bheri Hydroelectric Project is a run-of-river schemed hydroelectric project, located in Dolpa District. The headworks site is proposed at Kaigaun of Kaigaun VDC of Dolpa. Tentatively, the major structures including diversion weir, desanding basin, water conveyance tunnel lie in Kaigaun VDC of Dolpa. Similarly, the surge tank and powerhouse lie at Ila of Narku VDC of Dolpa. The Project area has partial accessibility up to the confluence of Thuli Bheri and Bheri River at the Dolpa Highway (under construction by GoN). Upto Khalanga,



Proposed Headworks Area of Upper Bheri Hydroelectric Project

the district headquarters of Jajarkot, the road is Black topped and beyond which the road is earthen type only. So, only about 10km of access road needs to be constructed from the confluence upto the Project site.

Similarly, Chainpur Seti Hydroelectric Project is also a run-of-river schemed hydroelectric project, located in Bajangh District, near Chainpur Bazaar. The headworks site is proposed near Dhamena VDC. All the major structures like diversion weir, desanding basin, water conveyance, surge tank and pressure tunnel lie in Dhamena VDC, Bajangh. The powerhouse site is located at Dhamena VDC, Bajangh.

There is a motorable earthen road upto Chainpur Bazaar, Bajangh which is about 2 km from Chainpur airport. Approximately, 25 km of new access road is required to be built to access the power house site of the Project and an additional 12km of project is required to reach the headworks.

In this fiscal year, a preliminary identification site visit of the Upper Bheri HEP was conducted and that for Chainpur Seti Hydroelectric Project shall be conducted in the next fiscal year.

Start of the project: F.Y 2071/72

Completion of the project: F.Y 2073/74

Survey of Transmission Lines & Substation

Survey Division has accomplished different activities during this fiscal year 2071/2072. The status of Survey activities of the transmission line and substation are following:

S.N.	Transmission Line (T/L) and Substation Project Name	District	Length of Transmission Line in KM	Project Status
1.	Marsyangdi - Kathmandu 220 kV	Tanahu, Gorkha, Chitawan, Dhading and Kathmandu	82.00	Completed
2.	Marsyangdi Corridor 220 kV	Tanahu, Gorkha, Lamjung & Manang	81.38	Completed
3.	Markichowk - Bharatpur 220 kV	Tanahu & Chitawan	27.95	Survey work Completed
4.	Kusaha - Biratnagar 132 kV T/L and Substation	Sunsari	22.80	Draft Report Submitted
5.	Barhabise - Kathmandu 400 kV	Sindhupalchowk, Kavrepalanchowk, Bhaktapur & Kathmandu	60.00	Completed
6.	Upper Arun 200 kV Additional	Sankhuwasabha	5.00	Completed
7.	Budhiganga - Punyapati - Kuine - Lamki 132 kV	Achham, Surkhet & Kailali	96.00	Running
8.	Kusma - New Butwal 220 kV	Parbat, Baglung, Palpa, Syangja & Rupandehi	75.00	Running

Other Activities:

In addition to regular work consisting of carrying out studies at different levels for different projects, PDD has been carrying out various activities which have been instrumental in developing the institutional strength of Nepal Electricity Authority in the field of consulting services. The following are the few of the activities of PDD carried out during the fiscal year 2071/72.

- Continuation of the construction supervision of Chameliya Hydroelectric Project in association with the joint venture of three local consulting firms (SHAH, SILT and ICON JV).
- Construction of Corporate Office Building Project NEA planned to establish a corporate office, commercial complex and business complex at 26 ropanis land at Durbarmarg, Kathmandu. A master plan was developed in 1989. Due to enormous change in building technology, evolution in latest office design concept and changed scenario in commercial building requirements, NEA modified the existing master plan through the Consultant 'Designer Pavilion (P) Ltd. For further improvement of the Project, NEA has selected the joint venture consortium of "BDAnepal (P.) Ltd., Innovative CREATEERS Architects & Engineers Pvt. Ltd. and MRB Associates." The detail

design of Corporate Office Building was completed in FY 2070/71 by the Consultant.

Project Development Department invited a bid for the pre-qualification of the contractor for the construction of NEA corporate office building at existing NEA premises, (towards southern end of the existing property) located at NEA head office, Durbarmarg. The project consists approximately rectangular building of 40 m x 29 m (Gross floor area just above 1100 m² at the basement level). The building is of 16 floor + 2 attic floor above ground, double basement for parking. (Floor area approximately 16,000 Sqm). From the invited contractors, the pre-qualified contractors have been short listed and evaluation report has been prepared. PDD has applied for the construction license in Kathmandu Metropolitan City Office in this fiscal year. The construction of the building is planned to be started in the coming fiscal year 2072/2073.



Environment and Social Studies Department

Environment and Social Studies Department (ESSD) is one of the integral departments of Engineering Service Directorate of NEA. This department executes all activities related environmental and social aspects of hydropower and transmission line projects which are being planned, designed, constructed or operated by NEA. This department is a commercial wing of NEA and with its technical expertise involved in conducting Environmental Impact Assessment (EIA), Initial Environmental Examination (IEE), Social Impact Assessment (SIA), Vulnerable Community Development Plan (VCDP), Resettlement Action Plan (RAP), Land Acquisition and Compensation Plan (LACP) studies along with environmental monitoring and implementation of mitigation measures and community support programs of hydroelectric, transmission line and distribution line projects.

During the fiscal year 2014/15, ESSD was actively engaged in environment and social studies, monitoring and protection of the environment. The department has successfully completed and get clearance from concerned ministry/ donor for IEE of 4 projects, IEE ToR of 2 projects, EIA ToR and Scoping 1 project and social safeguard report of 2 transmission line projects. The environmental studies conducted by ESSD in fiscal year 2014/2015 and their status are as follows:

- 1. Study Reports approved by Concerned Ministries**
 - a. Ministry of Science, Technology and Environment
 - i. Scoping and ToR for EIA of Garjyang- Khimti 132 kV TL project
 - b. Ministry of Energy
 - i. IEE of Marsyangdi-Kathmandu 220 kV TL project
 - ii. IEE of Samundratar-Trishuli 3 "B" Hub 132 TL Project
 - iii. IEE of Trishuli 3"B" Hub Substation Project
 - iv. ToR for IEE of Tamakoshi-Kathmandu 400 kV TL Project
 - v. ToR for IEE Bhulbhule- Middle Marsyangdi 132 kV TL Project
- 2. Study Reports Cleared by Donor Agencies**
 - i. Updated VCDP report of Khimti-Dhalkebar 220 kV TL Project (World Bank)
 - ii. LACP of Chilime-Trishuli 220 kV TL Project including Trishuli 3"B"Hub Substation (KfW and European Investment Bank).
- 3. Study Completed by ESSD**
 - a. EIA Completed Projects
 - Kohalpur-Surkhet 132 kV TL Project
 - Upper Trishuli 3'B' Hydroelectric Project (37 MW)
 - Tamakoshi V Hydroelectric Project (87 MW)
 - Garjyang-Khimti 132 kV TL Project
 - b. IEE Completed Projects
 - Chilime Trishuli 220 kV TL Project
 - Kaligandaki Corridor (Dana-Kushma) 220 kV TL Project
 - Bhulbhule-Middle Marsyangdi 132 kV TL Project
 - c. ToR and Scoping completed Projects
 - Dordi Corridor 132 kV TL Project
 - Koshi Corridor (Basantapur-Change) 220 kV TL Project
 - Kushma-Lower Modi 132 kV TL Project
 - Burtibang-Paudi Amrai- Tamghas-Sandikhark- Gorusinghe 132 kV TL Project
 - Modi –Lekhnath 132 kV TL Project (ToR and Scoping)



Questionnaire survey (Tamakoshi-Kathmandu TL Project)



Public Hearing Program organized at Rasnalu VDC-4, Ramechhap (for EIA of Garjyang-Khimti 132 kV TL Project) on June 6, 2015

ESSD has been undertaking environmental monitoring and mitigation of three under-construction hydroelectric projects (14MW to 60MW) and seven under-construction transmission line projects ranging 132 kV to 400 kV by establishing Environmental and Social Management Unit (ESMU) at project site. In the near future, ESMUs shall be established for Kaligandaki 'A' Hydroelectric Plant Rehabilitation Project, Upper Trishuli 3 'A' –Matatirtha 220 kV TL Project and Samundrar- Trishuli 3 "B" Hub 132 kV TL Project. Under mitigation and enhancement programs, different activities were conducted in this FY 2014/15 and their status is as follows;

Upper Trishuli 3 "A" HEP

- Two Safety and Social Awareness programs at Manakanamana VDC of Nuwakot District which benefitted 60 local people.
- Wildlife Management and Conservation Training program at Thulogau VDC, Rasuwa for 25 participants from community forest users' groups (CFUGs) and Langtang National Park Buffer Zone Management Committee.

Kulekhani III HEP

Plantation of 15,751 saplings of 15 different plant species as a compensatory plantation in an area of 7.34 ha of affected community forests.

Two training programs on Micro Enterprises Creation for 44 participants

One training program on Agricultural Productivity Intensification and Vegetable Farming for 20 participants.



Plantation Program at Kulekhani III HEP area (Makwanpur)



Social Awareness Training at UT3A Project area (Nuwakot)

Chameliya HEP and Balanch Attariya 132 kV TL Project

- Nursery Establishment at two places to produce 200,000 saplings
- Plantation of 18,000 saplings at different areas of Kailali district.



Plantation Program at Balach-Attaria TL Project area (Kailali)

Hetauda-Dhalkebar-Duhabi 400 kV TL Project

- Six Social Awareness Training for 245 project affected and local people,
- Four Safety Trainings were organized which benefited 113 contractor/sub-contractor supervisors, workers.



Public Consultation at Hetauda-Dhalkebar-Duhabi TL project area-ESMU

Hetauda-Bharatpur 220 kV TL Project

- One Driving Training for 20 project affected local participants;
- One Gender and Social Equity Training for 21 local participants.

Bharatpur-Bardghat 220 kV TL Project

- Social Awareness Training at 13 different places for 375 local people.



Social Awareness training at Bharatpur-Bardghat TL project area

Kabeli Corridor 132 kV TL Project

- Establishment of three nurseries; two in Illam district (at Chisapani VDC-9 and Godak VDC-3) and one at Panchthar district (Amarpur-5) to produce 1,20,000 saplings for the compensatory plantation program.
- Six Social Awareness Program for 192 local people,



Nursery established at Kabeli Corridor TL Project area (Panchthar)

- Biodiversity Conservation Awareness program for 18 schools of Panchthar and Illam districts covering 1826 participants.

Dumre–Damauli 132 kV TL Project

- Forest Conservation Awareness which benefitted 25 participants from 14 CFUGs
- Wildlife Conservation Awareness which benefitted 23 participants from 15 CGUGs.

In addition to activities of ESMUs, ESSD carried out the implementation work as mentioned in the VCDP of Khimti-Dhalkebar 220 kV TL Project. Under this, following major activities were accomplished in the FY 2014/15.

- Livelihood Support Program (Training on off-season vegetable farming; citrus fruit farming and livestock farming) conducted in four places of Ramechhap and Dhanusha district for 140 local people.
- Feasibility study of infrastructure projects
- Skill Development Program (two months of Mobile Repairing and House Wiring training) for 16 Project affected people of vulnerable communities.



Off-season Vegetable Farming Training (Ramechhap)

Soil, Rock and Concrete Laboratory

Soil, Rock and Concrete Laboratory (SRCL) established as Geotechnical Department under Engineering Service Directorate of Nepal Electricity Authority to provide services in material testing, geological and geotechnical investigations for the different phases of project development. It provides services like geological mapping, various types of geophysical surveys, core drilling and construction material investigation at different levels of the project to the different departments of NEA and the private sector. In the field of soil, rock and concrete engineering, it also provides services for carrying out in-situ tests and laboratory tests viz. determination of index properties, tri-axial tests, consolidation tests, point load tests, direct shear tests, uniaxial compressive strength tests etc. on a regular basis for clients inside and outside NEA.

Following are the major works executed by SRCL in fiscal year 2014/15

A. Geological and geotechnical investigation works

- 1) Geological and geotechnical investigation works of Tanahu Hydropower Project

This project is being developed by Tanahu Hydropower Limited, a subsidiary company of Nepal Electricity Authority (formally Upper Seti Hydropower Project) in Tanahu district. All the geological and geotechnical investigation works and core drilling works of 1190m length under Phase-2, Stage-1 at headworks and the geological and geotechnical investigation works of 130 m length under Phase-2, Stage -2 at Powerhouse and at adits has been completed in this fiscal year.

- 2) Geological and geotechnical investigation of Uttarganga Storage Hydropower Project

Geological mapping of dam-site area, surge tank area and powerhouse area of 243 hectares of Uttarganga Storage Hydropower Project has been completed in this fiscal year. The geotechnical investigation (Borehole drilling of 700 m and ERT of 4810 m) including geological mapping of headworks area and headrace tunnel will soon be started.

- 3) Additional Geological and geotechnical investigation works in Rahughat Hydroelectric Project

This project is being developed by NEA and is in construction. As a part of additional geological investigation at the surge shaft site of the project, a total of 65 m core drilling has been completed. The geological mapping of dam-site area of 20 hectares and along headrace tunnel of 8 km stretch totalling 243 hectares has been completed in this fiscal year.

- 4) 2-D ERT and Core drilling works at Landslide area along the access road to Upper Tamakoshi Hydroelectric Project

Two dimensional (2-D) Electrical Resistivity Tomography (ERT) of 1150m length and 60 m core drilling at the landslide zone along the Dolakha-Singati road (CH: 10 + 500) has been carried out.

Core drilling works at the Dam site of the Upper Tamakoshi Hydroelectric Project is also carried out in



Core drilling at Tanahu HEP



2-D ERT at Tamor Storage HEP

this fiscal year. Out of three core drilling at dam site left bank, core drilling of the two holes of 45m length

has been completed in this fiscal year and drilling at one remaining hole of length 20m could not be performed due to devastating earthquake of 25 April, 2015.

5) Electrical Resistivity Tomography (ERT) Survey and Geological Mapping at Tamor Storage Hydropower Project

Geological mapping of 165 hectares and ERT of 5285 m length at dam-site area, surge tank area and powerhouse has been completed in this fiscal year. Core drilling at the headworks will be started soon after the rainy season.

6) Geological and geotechnical investigation works of Dana-Kusma Transmission Line 220 / 440 kV

Test pitting and laboratory tests has been performed at Dana sub-station and for the foundation of five angle point towers of the transmission line .

7) Geological and geotechnical investigation works of Super Dordi Kha Hydropower Project

➤ Borehole drilling of 27 m at desander has been completed in this fiscal year. The borehole drilling at surge tank of 50 m length has already started and at dam site of 25 m length will soon be started after the completion of borehole at surge tank.

B. Laboratory Works

SRCL provides services for carrying out in-situ tests and laboratory tests including construction material survey and quarry site investigations. Following are the major works carried out in this fiscal year.

- Test pitting, sediment sampling and laboratory testing works of Rahughat Hydroelectric Project, NEA, Myagdi.
- Test Pitting , in-situ SPT/DCPT and laboratory tests of Kali Gandaki Corridor 400/132 kV (Dana – Kushma Section) Transmission Line Project, NEA.
- Laboratory test works (Alkali Reactivity Test - Bar and Prism method) on construction materials of Tanahu Hydropower Project, Tanahu.
- Compressive Strength test works on concrete of Street Light Improvement Project, Distribution and Consumers Services, NEA.
- Compressive Strength test works on concrete of Dumre-Damauli 132 kV Transmission Line and Middle Marsyangdi – Marsyandi 132 kV Second Stringing Project NEA. / Instalaciones Inabensa, S.A. Manuel Velasco, Pando 7, 41007 Sevilla, Spain, Branch office: Jhamsikhel, Lalitpur.
- Laboratory test works on construction material samples for camp sites of Upper Trishuli

Hydroelectric Company Ltd., Nuwakot.

- Laboratory test works on core samples (Uniaxial Compressive Strength, Point Load tests) of Singati Hydro Energy Pvt. Ltd. Dolkha -Vishwa Drilling Co. Pvt. Ltd.
- Laboratory test works on core samples (Uniaxial Compressive Strength, Point Load tests) of Dudhkoshi – 2 Hydroelectric Project Solukhumbu -Vishwa Drilling Co. Pvt. Ltd.
- Laboratory test works on core samples (Uniaxial Compressive Strength, Point Load tests) of Nagadhunga Tunnel Construction in Nepal JICA Project – Full Bright Consultancy Pvt. Ltd.
- Laboratory test works on core samples (Uniaxial Compressive Strength, Point Load, density and specific gravity tests) of Kathmandu Kulekhani Hetauda Tunnel Rajmarg (KKHT) Project – Full Bright Consultancy Pvt. Ltd.
- Laboratory test works on construction material samples of Tamor-Mewa Hydroelectric Project, Taplejung- Material Test Pvt. Ltd.
- Laboratory test works on construction material samples of Upper Karnali Hydroelectric Project (900 MW) – GMR Upper Karnali Hydropower Limited.
- Various in-situ SPT/DCPT tests and laboratory tests are performed on soil, gravel, sand, core and rock samples supplied by different private client/parties.

Electromechanical Design Division

This division handles all of the electromechanical issues arising within Engineering Services. These issues range from the design of electromechanical equipments of projects that are under various stages of study. Apart from design of the electromechanical equipments, this division also runs and maintains Central Workshops in Hetauda and manufacturers of concrete poles from its two Concrete Pole manufacturing Plants, one in Kotre and the other in Amlekhgunj.

Central Workshop

During the fiscal year 071/072, Central Workshop had completed maintenance of 363 Distribution Transformers capacity ranging from 10 KVA to 750 KVA. Also it had completed repairing, servicing, Shifting, Installation of 12 more Power Transformer capacity ranging from 630 KVA to 20 MVA. Central Workshop had also tested 1,909 Distribution Transformer brought from various outer sectors.

In order to carry out routine test of transformer up to 10MVA, Central Workshop is planning to established test bench. For this, the contract agreement between Nepal Electricity Authority and M/S Prolific Systems and Technologies Pvt. Ltd., India is executed on June

9, 2014 for the works known as design, manufacture, supply, delivery, installation, testing and commissioning of transformer Test Bench (EPC) to test transformers up to 10 MVA. At present, M/S Prolific Systems and Technologies Pvt. Ltd., India continues installation of equipment at Central Workshop, Hetauda.



Central Workshop

Kotre Pole Plant

Kotre Pole Plant was jointly established by Government of Nepal & Finland Government in 2042 B.S to implement for Pokhara Electrification Project. It is located in Dulegauda-2 VDC, Kotre of Tanahu District. After termination of this project, the plant was handover to Nepal Electricity Authority (NEA). Then this plant was run by NEA, Distribution & Consumer Service Directorate up to F.Y.2061/2062. In that period this plant was in near to close condition and only produced very few pole required for Pokhara Distribution center & its periphery. In F.Y 2061/062, again it was handover Engineering Service Directorate. Since, then the plant was maintained and started to produce PSC pole commercially. Now it is running with separate budget center to implement pole production & Distribution activities.



PSC Pole Production at Kotre Pole Plant

Production of PSC Pole in Past Three Fiscal Years.

SN	Pole Type	FY 2012/13	FY 2013/2014	FY 2014/2015
1	10.4m	332	260	320
2	8 m	2,188	2,352	2,236
	Total	2,520	2,612	2,556

Amlekhgunj Concrete Pole Plant

Concrete pole Plant was established in 2050 B.S at Bara District, Amlekhgunj V.D.C, Ward No. 3. It was jointly

established under the Government of Nepal in assistance of Asian Development Bank to implement for seventh electrification project. After termination of the project this plant was handed over to Nepal Electricity Authority (NEA), Engineering Service Directorate. The total capacity of manufacturing pole is 14000 in numbers

Daily production capacity of the plant and the production scenario are as follows.

Pole Type	FY 2012/13	FY 2014/015
8 m long	30	48
9 m long	20	30
11 m long	8	8

Production of PSC Pole in Past Two Fiscal Years.

SN	Pole Type	FY 2013/2014	FY 2014/2015
1	8.0 m	5,682	9,006
2	9 m	3,840	4,573
3	11 m	1,296	1,213
	Total	10,818	14,792



Amlekhgunj Concrete Pole Plant

NEA Training Center

The term training refers to the acquisition of knowledge, skills, attitude and conception as a result of the teaching of vocational or practical skills and knowledge that relate to specific useful competencies. As human resource is one of the most important ingredients of any organization and for its development, training is indispensable for the survival and advancement of the organization. So investment in training is treated as corporate assets of organization.

For upgrading and enhancing the skill, knowledge and attitudes of human resources, NEA Training Center (NEATC) is another important Department which is providing need based short term trainings of 2 days to 15 days for NEA employees with an objectives of upgrading the professional knowledge, skills and attitudes of manpower at operational and

managerial levels involved in the power sector. During the year under review, NEATC conducted 19 training programs (including Induction training to newly recruited staffs) for the staffs of NEA in different Fields of specialization. A Total of 529 participants participated in those training programs. Out of 529 participants, 462 participants were officer level and 67 participants were of assistant level. The training types involved induction, in-services or refreshers course and custom designed as per request and requirement. The training programs are designed as per the training need assessment (TNA) of an organization. The summary of trainings conducted on F.Y. 2071/072 by Training Center is presented below.

S.N.	Name of Training	Level	Service	Days	No. of
					Trainees
T1	Occupational Safety and Health	Asst	Tech	6	14
T2	Vehicle Maintenance	Asst	Tech	12	21
T3	Conflict Management and Negotiation Skill	Off	All	6	16
T4	Induction Training	Off	All	2	19
T5	Induction Training	Off	Tech	15	125
T6	Induction Training	Off	Tech	15	66
T7	Management Training (conducted in co-ordination with NASC)	Off	All	5	20
T8	Project Management Software Primavera	Off	Tech	10	18
T9	Inventory Management	Off	All	6	17
T10	Operation and Maintenance of Hydro Power Station (Basic) *	Asst	Tech	12	21
T11	TOD Meter Data Download and Analysis (Janakpur)	Off	Tech	5	17
T12	TOD Meter Data Download and Analysis (Biratnagar)	Off	Tech	5	29
T13	TOD Meter Data Download and Analysis (Butwal)	Off	Tech	5	24
T14	TOD Meter Data Download and Analysis (Hetauda)	Off	Tech	5	24
T15	TOD Meter Data Download and Analysis (Pokhara)	Off	Tech	5	21

T16	TOD Meter Data Download and Analysis (Kathmandu)	Off	Tech	5	23
T17	Basic Fitting and Machining Process	Asst	Tech	12	11
T18	Geographic Information System (GIS)	Off	Tech	10	22
T19	Advanced Excel With VB Programming	Off	Tech	8	21
Total				149	529

Training Type	No. of Trainees
Regular	319
Induction	210
Officer	462
Assistant	67
Total	529

*Training program could not be completed due to massive earthquake dated Baishakh 12,2072.

In addition to afore mentioned trainings, NEATC has also conducted 19 days training on "Applied Electrical Installation for Community Electricity Distribution for Improving Gender Inclusive Access to Clean Energy in Nepal, Bhutan and Sri Lanka" under Japanese Fund for Poverty Reduction (JFPR) in co-ordination with Asian Development Bank. 48 participants (33 male and 15 female) from different Electricity User's Community of Nepal successfully completed the training course.

In addition to training programs, NEATC provides seminar halls, class rooms, hostel and ground space on rental facilities to different users, groups/ organizations etc. on their request. Engineering colleges, Scout, Political Parties and various organizations used the facilities available in the training center for various purposes. The total income generated from these services amounted to Rs.3,063,408.50. The training center has also provided space and services for various offices of NEA in its premises at Kharipati.

Initially NEATC was conducting trainings on the basis of its annual training schedule which was discontinued for last few years and for F/Y 2072/073, it has published its annual training calendar scheduling 51 numbers of trainings. NEATC has targeted to provide different trainings for 913 NEA officers and non-officers from different business groups.



Administrative and academic buildings



Group photo after certificate distribution



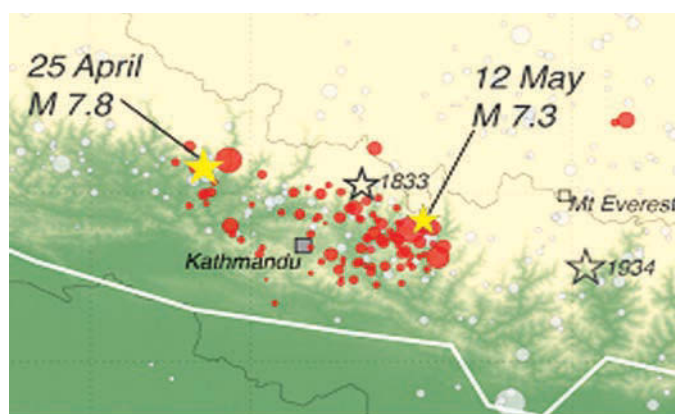
Practical Class of Mechanical Training



TOD Meter Training

Post-Earthquake Impact Assessment of NEA Buildings

Nepal experienced one of the greatest tragedies in the form of the 7.8 magnitude Gorkha earthquake on April 25, 2015 and its aftershocks including the 7.3 magnitude aftershock of May 12, 2015. The earthquakes resulted in large scale damages and NEA buildings were no exception. In view of the gravity of the situation Nepal Electricity Authority decided to assess the damages to its buildings and property immediately after the major earthquake. On May 07, 2015 (2072/01/24) NEA formed a Committee comprising of Manager Mr. Amogh Sharan Manandhar as the Coordinator, Deputy Manager Mr. Ambikesh Kumar Jha as the Member Secretary and



Source: USGS

Assistant Manager Mr. Jhalak Ram Subedi as Member to conduct Post Earthquake Impact Assessment. The committee mobilized four different groups, each consisting of seven engineers from Engineering Services Directorate, Generation, Transmission, and Distribution and Consumer Services (DCS) to collect data from the most affected districts simultaneously. During the period of continued aftershocks and ravaged situation the task of collecting earthquake damage data from the site, some of which included visiting dangerously broken



Ravaged Masonry Building

and precarious buildings, was not easy. However the engineers assigned with the duty of damage assessment showed great courage, spirit and executed the work efficiently under very challenging conditions where every now and then the earth shook, sometimes when they were investigating inside the damaged buildings. Their hard work and dedication at such a time of national calamity is commendable.



Damaged inside wall

Assessment at NEA buildings were done at the districts of Dhading, Gorkha, Sindhupalchowk, Kavrepalanchowk, Nuwakot, Rasuwa, Dolakha, Kathmandu, Lalitpur, Bhaktapur Ramechhap, Sindhuli, Kaski, Lamjung, Parbat,

Syangja and the Pole Plant at Bara. A total of about 500 buildings including the office buildings, staff quarters, store houses, substation buildings, guard houses, canteen, etc. were assessed within a very short time of less than a month. The assessment included collection of rapid visual damage assessment data, collection of other information from NEA staff at the premises, suggesting the occupants about the condition of the buildings at site (whether it is safe to use the building for immediate purposes or not), analyzing the data and working out methodologies for future course of action. Visual inspection of NEA buildings was carried out between May 27, 2015 (2072/02/13 B.S.) through June 07, 2015 (2072/02/24 B.S.). The extent of damage to the buildings was categorized into five categories G1, G2, G3, G4, and G5. G1, G2 category damage meant the building is safe for immediate occupancy with minor architectural repair (green); G3 meant restricted use of some parts of the building and need restoration of damaged portion (yellow). G4 and G5 were assigned to the buildings unsafe to enter for immediate occupancy that need restoration/demolition of total building based on structural analysis (red). The percentage of damage to the building was specified based on the field inspection and evaluation ranging from 0-100 %.

After the visual inspection of buildings, extent of damage was found to be more in load bearing structures compared to RC frame structures. NEA suffered more



Intact NEA Central Office

damage to its buildings because majority of its buildings especially at the Distribution and Consumer Services and also the staff quarters are load bearing. Also the extent of damage in case of RC buildings was found more severe at the ground floor of multi storied buildings. Further, it was observed that many of the buildings did not comply with the basic engineering code of practice during their construction; for example it was observed in some cases that RCC building was found constructed over stone masonry building. Also most of the buildings were old. Buildings constructed with stone in mud were delaminated.

The Rapid Visual Damage Assessment revealed that many of the buildings which were constructed with the inferior quality mortar such as mud mortar were damaged much severely than the buildings constructed with high strength mortar such as cement sand mortar. RCC structures designed and supervised by engineers experienced little structural damage. However in many cases the infill walls were adversely affected by the earthquake. Damage to the buildings was more pronounced in case of Gorkha, Dhading, Nuwakot, Sindhupalchowk and Dolakha districts. NEA buildings at Lamjung, Kaski, Parbat and Syangja were least affected by the earthquake except for different level cracks in infill walls and minimal collapses at one or two places. Many of the cracks in RCC buildings were seen concentrated

at the beam wall interface and column wall interfaces.

The recommendations of the committee after review and analysis of the collected data included avoiding patch repair works in case of grade 3, 4 and 5 damages. Such patch repair works would only hide internal damage to structures resulting in continuation of weak structure vulnerable to more damage in aftershocks and future earthquakes. In such cases detailed analysis and strengthening works need to be undertaken immediately complying with engineering norms, earthquake resistant technology and standard code of practice. Buildings damaged under G1 and G2 category could be repaired by removing the patches of plaster and re-applying the same with wire mesh or suitable improved quality material but it must be carefully performed under the supervision of qualified engineer. Moderately damaged buildings need proper strengthening work (including retro-fitting in case of necessity). Load bearing structures which are very severely damaged need to be completely demolished and re-constructed. The recommendations also include that NEA buildings must comply with the prevailing National Building Code (NBC) of Nepal. Similarly all buildings must be designed and constructed earthquake resistant and all civil structures after repair or re-construction/new construction must be certified of adoption of proper engineering construction methodology by a qualified engineer i.e. such works must be repaired/reconstructed under supervision of qualified engineer.

Project Management Directorate

A New Directorate established in the Nepal Electricity Authority Organogram to facilitate projects funded by Asian Development Bank. It is responsible for preparation, procurement and construction of all new ADB projects starting with SASEC- Power System Expansion Project (RRP NEP 44219). In addition, PMD continues to coordinate, monitor and report the implementation activities of the projects that are being run under Energy Access and Efficiency Improvement Project (ADB Loan 2587, Grant 0182 and Grant 0183), Electricity Transmission Expansion and Supply Improvement Project (ADB Loan 2808, Grant 0270 and Grant 0271) and Project Preparatory Facility for Energy (PPFE).

Projects being currently executed:

1) Samundratar-Trishuli 3B 132kV Transmission Line

The Samundratar-Trishuli 3B Hub 132kV Transmission Line project is a must to evacuate power from different hydropower projects to be developed by IPPs in the districts of Nuwakot. The project includes construction of 26 km double circuit transmission line from Samundratar to Trishuli 3B Hub and new 132/33kV, 2x30MVA Substation at Samundratar, Nuwakot. Further, in coordination with ADB, the project financing agreement has been completed with European Investment Bank (EIB) to provide funding (Loan) of US\$ 12.0 Million. The project is expected to be completed by FY 2074/75.

2) Marsyangdi Transmission Corridor Project

Marsyangdi Transmission Corridor Project has been envisaged to evacuate approximately 1500 MW of power generated by various hydropower stations in the Marsyangdi River Corridor. The project comprises of construction of 115 km long Double Circuit Transmission Line from Manang (Dharapani) to Khudi (32km), Khudi to Markichok (53km), Markichok to Bharatpur (30km) and 220/132/33kV substations at Dharapani, Khudi, Udipur, Markichok and bay extension at Bharatpur Substation. The estimated cost of this project is US\$ 100 Million which is being funded by EIB and GoN. The project is expected to be commissioned by FY 2075/076 (2018/019).

The detail survey from Manang to Bharatpur is completed. Also, Land acquisition for Substation Construction at Khudi and Markichowk has been completed. Further, Udipur substation shall be constructed at land owned by NEA at Phaliyasangu and bay extension at Bharatpur shall be done at existing land of new Bharatpur substation at Aptari.

3) Marsyangdi-Kathmandu 220kV Transmission Line Project

The objective of this project is to increase power evacuation capacity of the Marsyangdi Corridor which ultimately will reinforce the INPS. The cost of this project

is estimated at US\$ 50 Million, which is jointly funded by ADB, Government of Norway and Government of Nepal (GoN). Also, the project will construct 220kV Double Circuit, 85 km TL from New Marsyangdi (Markichok) to Matatirtha and 220/132kV substation at Matatirtha and bay extension work at New Marsyangdi (Markichok) substation. The project is expected to be commissioned by FY 2073/074 (2016/017).

The IEE has already been approved by the Ministry of Energy. The land acquisition for 220kV substation expansion at Markichowk has been completed.

4) Kaligandaki Corridor 220kV Transmission Line Project.

The prime objective of this project is to increase power evacuation capacity of the Kaligandaki River Corridor which ultimately will reinforce the INPS. The cost of this project is estimated to US\$ 132.4 Million and is jointly funded by ADB, Government of Norway and GoN. The project is expected to be commissioned by FY 2073/074 (2016/017). Furthermore, the project includes construction of 38.2km Double Circuit 220kV line from Dana (Myagdi) to Kusma (Parbat), 71.7km Double Circuit 220kV from Kusma (Parbat) to New Butwal S/S, 45km Double Circuit 400kV from New Butwal S/S to Bardghat (Nawalparasi) and 220/132/33kV substations at Dana, Kusma, New Butwal and Bardghat.

The land acquisition for Dana is completed, whereas for Kusma and New Butwal it shall be completed in this fiscal year. The IEE of Dana-Kusma section is awaiting approval at MoE, and for the other sections, the IEE is in progress. Further, the survey works of Kusma-New Butwal section is being carried out by the PDD and shall be completed by September 2015.

5) Grid Substation Capacity Expansion Project

The objective of this project is to reinforce & upgrade various existing substations. The project has activities in following substations.

- i) Gandak Substation
- ii) Butwal Substation
- iii) Bharatpur Substation
- iv) Kawasoti Substation
- v) Damauli Substation
- vi) Banepa Substation
- vii) Dhalkebar Substation
- viii) Lahan Substation

The Contract for this project has been signed on 5th July 2015 and the construction works is expected to be commissioned by FY 2074/75.

6) Distribution System Augmentation and Expansion Project

The main objective of this project is to construct twenty five new substations and upgrade eleven existing substations along with distribution lines at various locations of the country. Further, upon completion this project will increase the substation and distribution line capacity such that it can cope up with the increased demand. The cost of the project is estimated at USD 46 Million and is scheduled to be completed by FY 2074/75. The project shall increase electricity access to people with enhanced quality and reliability.

7) Project Supervision Consultant Project

The objective of this project is to undertake various Supervision and Procurement support of the High Voltage Transmission and Distribution system projects through a consulting firm for SASEC Power System Expansion Project like:

- i) Review and assist the Employer on approval of contractor's design in accordance with the Employer's requirements and technical specifications in the contract,
- ii) Provide oversight of all aspects of the construction in order to assure that it is conducted properly in

accordance with the contract

- iii) Develop and implement a quality assurance program for review and approval of design; construction; monitoring schedule; inspection of materials before shipment, upon arrival and upon erection; review of documents to assure quality of delivered goods; comparison of as-built drawings to design; and in addressing shortcomings in any of these areas
- iv) Supervise the testing and commissioning of all components of the lines, substations, SCADA, communications and protection to demonstrate their capability to meet warranted design criteria and addressing any lack of compliance(if any).

The Expression of Interest (EoI) for this consulting works has been evaluated. The consultancy works is expected to be commenced by February 2016.

8) Distribution System Master Plan Project

The principal objective of this project is to prepare a Rural Electrification Master Plan of Nepal (REMP-N) for the entire country, with emphasis on the generation and distribution of electricity for enhancement of livelihoods in the remote settlements of the country in an efficient way. A consulting firm will be engaged to work closely with NEA to develop the master plan. The overall objective of the assignment is to identify the least cost and economically viable means to reinforce, upgrade and expand Nepal's electricity system, including on- and off-grid, to achieve universal access to electricity 2025. The master plan will include policy recommendations, a comprehensive electrification and distribution augmentation program and detailed case studies.

The Expression of Interest (EoI) is expected to be invited in the first quarter of this fiscal year

NEA's Subsidiary and Associate Companies

CHILIME HYDROPOWER COMPANY LIMITED

Chilime Hydropower Company Limited (CHPCL), a subsidiary of Nepal Electricity Authority (NEA) was established in 1996 with the main objective of harnessing the hydropower potential of the country for the benefit of the people at large by optimally utilizing the untapped resources and creating synergy with the private sector. The company's 51% share belongs to NEA, 25% to employees of NEA and CHPCL, 10% to local public of Rasuwa District and the remaining 14% share to the general Public. The scheme has an installed capacity of 22.10 MW, generating 20 MW based on the power purchase agreement with Nepal Electricity Authority (NEA). The project is designed to generate 137 GWh energy per annum. The generated energy from this Project is being fed into the National Grid of Nepal Electricity Authority (NEA) through a 38 km long 66 KV transmission line at Trishuli, Nuwakot District.

Chilime Hydropower Plant (CHPP)

In Fiscal Year 2014/2015 Chilime Hydro power Plant was able to transmit an excess of 11.06% of energy in addition to the deemed energy (132.795GWh).

. The total delivered energy to NEA was 147.478 GWh. Based on these figures, the available capacity of the



plant for the fiscal year 2071/72 was estimated to be 172.6475 GWh.

Under the scope of Corporate Social Responsibility (CSR)

activities in the fiscal year 2014-15, Chilime has spent almost 5.0 million in community and local development works like health, education, infrastructure, drinking water, irrigation etc.

There is no major impact of earthquake in hydraulic structures. Plant is in Normal operation. Few residential buildings are damaged due to earthquake occurred on 25 April, 2015.

Chilime has launched four hydropower projects with total capacity of 270.3 MW for construction in parallel through its three subsidiaries, namely Rasuwagadhi Hydropower Company Limited (RGHCL), Madhya Bhotekoshi Jalavidyut Company Limited (MBJCL) and Sanjen Jalavidyut Company Limited (SJCL). Likewise Chilime has already applied for the survey license to Department of Energy Development (DoED), Govt. of Nepal for the development of other new hydropower projects to meet the company's target of 500MW by 2020.

Sanjen Jalavidhyut Company Limited (SJCL)

Sanjen Jalavidhyut Company Limited (SJCL), is a subsidiary of Chilime Hydropower Company Limited (CHPCL) was established on 1st February, 2010 AD. SJCL is developing two hydroelectric projects, namely, Sanjen (Upper) Hydroelectric Project (SUHEP) (14.8 MW) and Sanjen Hydroelectric Project (SHEP) (42.5 MW) in cascade, with its own equity and loan from financial institutions of Nepal. Both the projects' financing mechanism is 50:50 Debt: Equity ratio. 51% of the equity part is invested by the promoters of the company, which is composed of CHPCL (38%), Nepal Electricity Authority (10%) and District Development Committee (DDC) and all 18 Village Development Committees (VDCs) of Rasuwa (3%). For financing the remaining 49% of the investment, SJCL will raise through share participation of the public, which is composed of Depositors of Employees' Provident Fund (EPF-19.5%), Employees of EPF (1%), Employees of Promoters (3.5%), General Public (15%) and Project Affected Local People (10%).

Progress Status

- Project affected 18 households are successfully resettled.
- Consultancy Services: SMEC International Pty. Ltd., Australia has been undertaking the Detailed

Engineering Design & Construction Supervision of both projects.

- Lot 2 Civil Works:
Lot 2 Contractor for SUHEP is ECI-BGCCPL J/V and progress are as follows:
- River Diversion work is completed. Concreting on weir and undersluice are in progress. Desander construction works are in progress. Total 750 m



tunnel construction works are completed out of 1840 m which includes headrace tunnel, penstock tunnel, adit tunnel, surge shaft adit, aeration tunnel and valve chamber tunnel.

A= Construction of river diversion weir and undersluice, B= Headrace Inlet Portal, C= Bailey Bridge over Bemdang Khola, D=Intermediate penstock adit Portal

Lot 2 Contractor for SHEP is SEW-TUNDI J/V and progress are as follows:

- Total 500 m tunnel construction works are completed out of 5200 m tunnel which includes headrace tunnel, penstock tunnel, adit tunnels and aeration tunnel. The contractor is preparing construction of inclined penstock shaft of 252 m length .
- Powerhouse excavation work is in progress.
- One Bailey Bridge over Bemdang Khola on the access road to project site has been installed.
- Lot 3 Electromechanical Works: Lot-3 contractor for both projects is Dongfang Electric Corporation ,China. Under this contract fabrication of Electromechanical equipments in China are in progress.
- Lot 4 Hydromechanical Works: Lot-4 contractor for both projects is Nepal Hydro & Electric (NHE). Under this contract fabrication of hydromechanical

components of both projects are in progress.

- Lot 5 Transmission Line Works: Detail Design of 132 kV transmission line works and IEE works are in progress. Total 7 km 132 T/L upto Chilime Hub need to construct under Lot 5. The construction of Chilime Hub & 220 kV T/L from Chilime-Trishuli-Mathatirtha is entire responsibility of NEA. The projects were progressing normally until the devastating Gorkha Earthquake 2072 and its aftershocks. Consequently the projects access roads and diversion weir structures were severely damaged including construction power line. However, the roads and power supply was repaired & reinstalled with delays of 69days . At present both projects construction activities have been resumed. A total of 324.31 GWh of electricity will be added into NEA Grid upon completion of these two projects. The total cost of the two projects is NRs. 7.24 billion excluding IDC.

Rasuwagadhi Hydropower Company Limited

Rasuwagadhi Hydroelectric Project (111 MW)

Rasuwagadhi Hydropower Company Limited (RGHPCL), a subsidiary company of Chilime Hydropower Company Limited (CHPCL) is established in Shrawan 17, 2068 as a public limited company for the development of Rasuwagadhi Hydroelectric Project (RGHEP) having capacity of 111 MW. It is located in Rasuwa district. The project is accessible by the Kathmandu -Trisuli – Syabrubesi – Rasuwagadhi road at a distance of 150 km up to the headwork site at Rasuwagadhi of Rasuwa district. The project is planned to be completed at August, 2017.

Capital Structure of the company



The company is planning to manage its capital requirement for the construction of Rasuwagadhi Hydroelectric project from debt and equity under the debt equity ratio of 50:50 excluding IDC cost. The company is managing

the debt requirement of the project from the Employees Provident Fund (EPF) under the term loan agreement made on Marg 22, 2068 and equity investment from 51% promoter share and 49% public share. The details of the share holdings are as follows:

The Project

The headwork site is located about 400 m downstream from the confluence of Kerung khola and Lende khola which are the Boundary Rivers of Nepal and China. The total headrace tunnel length of the project is 4203m. Tail water from the powerhouse will be released to main river course through 600 m long tailrace tunnel in the downstream of powerhouse site. The project is a run-of-river type having the capacity of 111 MW and the annual energy generation will be 613.875 GWh with the available gross head of 169 m.

Key Features of the Project:

Type of Project:	Run-of-River(ROR)
Design Discharge (Q40):	80.00m ³ /s
Geology:	Quartzite, Migmatite and Gneiss Rock
Gross Head:	169m
Headwork:	Overflow diversion Weir with Undersluice and Side Intake
Desander, Type and Size:	Underground (3 - 125mx15mx12m)
Tunnel length and size:	4203m, dia.-6m ~ 7m
Powerhouse type and size:	Underground, 76.3m x 15.0m, 35.5m
Turbine, Type & No:	Francis, Vertical Axis & 3 Nos.
Turbine Unit Capacity	38.50 MW each
Generator, Capacity & No.:	3 phase Synchronous AC, 3x43.75 MVA
Installed Capacity:	111.0 MW
Annual Energy Generation	613.87GWh
Dry Months Energy	84.32GWh
Wet Months Energy	529.55GWh
T/L length, Voltage	10km ,132kV Double Circuit up to Chilime Hub

Present Status of the Project

Project has achieved many milestones including signing Power Purchase Agreement (PPA) with NEA, signing loan agreement with Employees Provident Fund etc. In implementation front, contract has been made for the major works of the project: Consulting services, Infrastructure works, Lot 1: Civil and Hydro-Mechanical works in Engineering Procurement Construction (EPC) contract model and Lot 2: Electromechanical works in Plant & Design Build (P&DB) contract model. The Consultant and Contractors has already been mobilized

at site and the work progress was satisfactory before earthquake of magnitude 7.8 dated on 25 April, 2015. Upto 24 April 2015, the project work had been progressively undertaking by the contractors via 12 working fronts. Almost all access tunnels (adits) had already been completed. Contractor was busy in underground works in powerhouse cavern excavation, raise boring of the surge shaft after finishing penstock shaft pilot tunnel excavation, excavation of headrace tunnel, underground desander and intake tunnel excavation. Along with excavation of desander and intake tunnel, the contractor was concentrated at headworks particularly in undersluice/intake area. Excavation of undersluice/intake area upto foundation level had been completed and routing for jet grouting piles was ongoing.

The summaries of progress of major works of the project before the catastrophes earthquake are as follows:

1. Infrastructure works

- Installation of 12 KV VCB Switchgear has been completed in Chilime Power Station for the power supply to project construction site.
- Construction of 16 km long 11 kV transmission line for construction power of the project.
- The Local Contractor ANK Construction Co. Pvt. Ltd. is being constructed the Camp Facilities for employer. The contractor has completed frame structure of office and other residential buildings. The internal finishing and site development works were ongoing.

2. Consulting Services

For the consulting services of the project, contract agreement has been signed with M/S SMEC International Pty Ltd., Australia on 3 December 2012. The Consultant is currently doing the review/approval of design works and construction supervision of

3. Lot 1: Civil and Hydro-Mechanical Works

For the construction of Lot 1: Civil and Hydro-Mechanical Works, contract agreement has been signed with M/S China International Water and Electric Corp. (CWE), China on 5 January, 2014. The Contractor has mobilized at site from 6 February 2014 and the



progress of the works of this lot are as follows:

- The Topographic Survey has been completed, geological investigation is continued and preliminary design works has completed. Detail design of the project works has been continued.
- The Contractor’s camp facilities, construction facilities, workshop, laboratory, 3-Bailey bridges at headwork, powerhouse and adit 2 including track road to access the adits and establishment of explosive storage facilities has completed.
- Out of 7.75km total length of adits, headrace and tailrace tunnel, 3.10 km length has completed.
- About 75% of underground powerhouse, 25% of Transformer Cavern and 20% of underground desanding basin works has completed.
- Construction of 1st stage cofferdam and the excavation of foundation of intake and undersluice has been completed. The foundation treatment works like jet grouting is being continued and was at the final stage.

4. Lot 2: Electro-Mechanical Works

For the construction of Lot 2: Electromechanical Works, contract agreement has been signed with M/S For Lot 2: Electromechanical Works, the contract agreement has been signed with M/S VOITH Hydro Pvt. Ltd, India on 31st July, 2014. The contractor has been mobilised for the detail design and contractor’s infrastructure works at the project site.

5. Lot 3: Transmission Line Works

Detail survey of 10 km long double circuit 132 kV transmission line has been completed and detail design is in progress. Term of Reference (TOR) of IEE has approved by Ministry of Energy and Final report of Initial Environmental Examination (IEE) for 10 km long Transmission Line has been completed and submitted for the approval. The tender documents of the work are being prepared and finalizing soon.

Effects of Earthquake on the project

Being closer to the epicenter of main quake i.e. Barpak, Gorkha, Rasuwagadhi Hydroelectric Project site got some irreversible damages like death casualties and structural & non-structural damages. Among the casualties, 2



Chinese personnel lost their lives and 19 personnel got injured. Numbers of local people and people from outside have lost their life and some are still missing due to the terrible landslide at Rasuwagadhi area.

The consequent landslides, rock toppling, rock slide and rock falling possessed the project site at risk.

Water supply, power supply, public road, internal access road were damaged and blocked due to the severe impacts of horrified earthquake. Cofferdam, made for the excavation & construction of under sluice, has been smashed by flood resulted due to the heavy landslide on Bhotekoshi river. As a result, many of the plants and equipments are sinking on inundated undersluice area and got damaged. Similarly, portal structures of tunnels, material stockyard, contractor’s camp, Consultant residence, Employer’s resident and office building got damaged. The earthquake and its consequences i.e. landslide and rock fall are creating future alarms to safety and security of workers. Considering these situations, the contractor has submitted a letter to the employer with notification of force majeure events and suspended the work immediately after disaster. The contractor has claimed to the insurance company for an amount of \$18 million. It is under the detail evaluation process by the insurance company.

Employer’s efforts

- The road section form Kalikasthan to Rasuwagadhi was damaged because of the earthquake disaster impacts in mountainous region i.e. heavy rock falls, landslides and heavy cracks & road



subsidence at many places. District administration office, department of road and the project team has jointly mobilized initially and later on Chinese Government team has also mobilized and the road was opened.

- The maintenance of damaged construction power line was started immediately by mobilization of project team in coordination with NEA team from



Dhunche branch. The maintenance work has been completed.

- The RGHEP site office was continuing even during natural calamity with a small team of Employer's engineer and a senior team including consultant personnel has been continuing the site visit and in touch with the post disaster development and detailed observation in site.
- In Kathmandu, the employer has made several formal & informal meetings with consultant and contractor's representative frequently to expedite the project plan. The series of meeting is ongoing and the employer is optimistic to mobilize the contractor in site timely without any delay.

Conclusion and way forward

On the basis of preliminary site inspection of RGHEP and consultant team, the natural disaster has possessed a significant damage to this under construction project, however the access road to site has already been opened and construction power is also available. The employer and the consultant has already instructed to the contractor to prepare the project recovery plan for early mobilization. The discussion with the contractor regarding the work schedule is going on and a continuous effort is being made for creating a conducive environment to mobilize the contractor without any further delay.

Madhya Bhotekoshi Hydroelectric Project (MBKHEP-102MW)

Madhya Bhotekoshi Jalavidyut Company Ltd. (MBJCL), a subsidiary of Chilime Jalavidyut Company Limited, has started to construct Middle Bhotekoshi Hydroelectric Project (102 MW) located in Sindhupalchowk District of Bagmati Zone of the Central Development Region. The main Construction works are splitted into following three contract packages:

- Lot 1 Civil and hydro-mechanical works on EPC contract model.
- Lot 2 Electromechanical works on PDB contract model.
- Lot 3 Transmission line and substation on PDB contract model.

The activities of the project are highlighted below:

1. Land acquisition, Compensation, private and Government land lease:

Among the required land of 361 Ropani, acquisition process has been completed for all and the land owners have received the compensation for about 276.71 Ropani.. Estimated compensation of existing Household is NRs 86.5 Million out of which NRs 55 Million has already been distributed to the concerned.

Around 160 Ropani of Private Land has been taken in Lease. 14 Hectares of construction sites (PH, HW, Adit)

lies within community forest and the process for leasing these areas is in final stage.

2. Construction Activities

Infrastructures

- Adit-1 tunnel of Length 250m and 5m diameter completed on Jan 2013;
- Excavation of Diversion Tunnel (Length: 330m) completed;
- Six numbers of permanent RCC buildings out of ten are in completion stage for office and residence of MBKHEP staffs and consultant staffs;

Civil and Hydro mechanical (LOT 1) Contract:

The contract agreement with the LOT 1 contractor was completed on Jan 01, 2014 and the work commencement was provided to the contractor on Feb 11, 2014. Major achievements by LOT 1 contractor are as follows:



Camp facilities for Employer/Consultant



Diversion Tunnel

- Geological boreholes completed;
- Contractor's mobilization and Design review completed;
- Construction of Access Road to Adit 1, Adit 2 and surge tank accomplished;
- 15 Rmt of HRT excavation from inlet portal completed;
- 37m of Adit 2 tunnel excavated;

- Aggregate crushing plant, Batching plant, Contractor’s Camp facilities, Workshop, and Laboratory.....etc in completion stage.

The work progress of the LOT 1 remained bit slower in comparison to base Schedule. In addition, the LOT 1 Work progress was adversely affected by the Landslide caused in Jure on Aug 02, 2014 and the devastating Earthquake occurred on 25 April 2015 and series of aftershocks caused thereafter.



Batching Plant at Headworks



Aggregate Crushing Plant

LOT 2 Electromechanical Works

Contract agreement made with M/s Andritz Hydro Private Limited, India on July 10, 2014 with the Contract effective from September 09, 2014. The detail design has almost completed and manufacturing of major components/equipments are in Progress.

LOT 3 Contract

Survey license for 220 kV Transmission line from powerhouse to Barabishe has been received and the relevant preparatory works like survey, environmental study and preliminary design is in progress.

Construction planning and scheduling

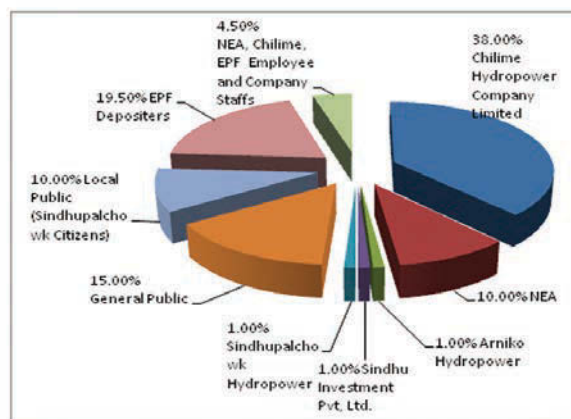
The planned commercial operation date of the project is June 15, 2017. However, construction activities of

the project has been disturbed by some social issues, big land slide in Jure last year, devastating earth quake on 25th April 2015 and series of aftershocks. This may shift the project completion date by 9 to 12 Months.

Capital Structure

The Company has planned to manage its capital requirement from Debt and Equity under the debt equity ratio of 50:50 excluding IDC cost. Financial closure has been made for the debt part of the project from the Employees Provident Fund under the long term loan agreement. The equity investment will be made from 51% promoter share and 49% public share.

Details of shareholdings are as follows:



Upper Tamakoshi Hydropower Limited

Upper Tamakoshi Hydropower Limited (UTKHPL) was established on 09 March 2007 (2063 Falgun 25 B.S.) as a subsidiary company of NEA an autonomous public company with the primary objective of for developing 456 MW Upper Tamakoshi Hydroelectric Project (UTKHPEP) with utilization of domestic financial resources. The majority shares (51%) of UTKHPL the Company belong to four public entities, namely, Nepal Electricity Authority (NEA), Nepal Telecom (NT), Citizen Investment Trust (CIT) and Rastriya Beema Sansthan (RBS) with 41%, 6%, 2% and 2% stakes respectively. The rests of the equity capital will be raised from general public (15%), residents of Dolakha district (10%), contributors in Employees' Provident Fund, EPF (17.28%), NEA and UTKHPL staffs (3.84%) and staffs of debtor institutions (2.88%).

A seven-member Board of Directors representing 4 from NEA, one each from EPF and NT and one from public shareholder (to be nominated) has been constituted at present. Presently, Tthe board is being chaired by the Managing Director of NEA, whereas one member each from CIT and RBS represents as invitee in the board. The company has issued the shares to the contributors in EPF, staffs of NEA and UTKHPL and staffs of debtor

institutions plans to issue the shares to the residents of Dolakhadistrict and contributors of EPF in the Fiscal Year of 2014/2015.

Project Features

UTKHEP, one of the national pride projects of Nepal, is located in Lamabagar VDC of Dolakha District in Central Development Region of Nepal. UTKHEP is a run-of-the-river development with a live storage volume sufficient for four hours daily peaking operation. The project will generate 2,281 GWh of energy annually with the available gross head of 822 m and design discharge 66 m³/s. The Project comprises following major components:

- 22 m high and 60 m long concrete diversion dam integrated with 35 m wide intake on the right bank of Tamakoshi river;
- 225 m long twin settling basin, , about 8 km long headrace tunnel, two vertical penstock shafts; ,
- An underground powerhouse cavern (142m x 13m x 259 m) along with a , transformer cavern (167m x 13m x 17.5 m) and about 3 km long tailrace tunnel.

The electro-mechanical equipment consists of six sets of vertical Pelton Turbines (Rated Power of 79.5 MW each) coupled with six sets of synchronous generators (Rated Power of 90 MVA each). The generation voltage of 11 kV will be stepped up to 220 kV by 18 (plus one spare) numbers of single phase transformers of rated capacity 90 MVA each. The energy generated from the project will be evacuated to the national grid at Khimti Sub-station through 47 km long double circuit 220 kV Transmission Line.

Financial Arrangement

The approved cost estimate of the project prior to bidding of different construction lots and consultancy services in different stages is was 441 456 MUSD\$ (NRs. 35.29 Billion) excluding Interest During Construction (IDC) at March 2009 price level. However, the project cost has been forecasted as 460 47163 MUSD MUSD\$ as of March 2015 due to increments in administrative expenditures and market prices, increments in costs of consultancy services due to increase in scope of works and additional time, additional taxes and duties to be paid, rise of US\$ against NRs, and modification in design of lower parts of headrace tunnel including some additional works. Furthermore, additional costs will be incurred due to recent earthquakes of April/May 2015. The project is being financed through 30% equity and 70% debt proportions. As per the separate loan agreements, EPF will invest NRs. 10 Billion as loan and NRs 2 Billion as debenture in the project, whereas NT will invest NRs. 6 Billion as loan. Similarly, CIT and RBS

each will invest NRs. 2 Billion as loans. Furthermore, Government of Nepal (GoN) has decided to provide loan upto NRs. 11.08 Billion as the gap funding during implementation of the project.

Power Purchase Agreement (PPA)

PPA has been signed with NEA on 29 December 2010. As per the PPA, average purchase rates have been fixed as NRs. 3.50 per unit for the base year (2010/11) and NRs 4.06 per unit at Commercial Operation Date (COD). After 9 years of COD with annual escalation of 3%, the average purchase rate will remain as NRs. 5.30 per unit throughout the tenure of PPA.

Project Status

The project is being implemented with four separate contract packages: (i) Lot 1 - Civil Works, (ii) Lot 2 -



Hydro-mechanical Works, (iii) Lot 3 - Mechanical and Electrical Works and (iv) Lot 4 - Transmission Line & Substation Works. The respective contractors for those lots are (i) Sinohydro Corporation Ltd., China, (ii) Texmaco Rail and Engineering Ltd., India, (iii) Andritz Hydro GmbH, Austria and (iv) KEC International

Ltd., India. J/V Norconsult AS, Norway – Lahmeyer International GmbH, Germany (JVNL) is assigned as the Engineer/Consultant for construction supervision of the project.

The project has achieved overall physical progress of 66.576.2% by the end of the fiscal year 2014/2015 (20143/154). The breakdown of progress in major civil works is as follows:

SN	Project Components	Progress
1	Headworks Concrete	71.185.3%
2	Headrace Tunnel Excavation	81.266.0%
3	Audit/Other Tunnels Excavation	998.2%
4	Powerhouse/Transformer Caverns Excavation	100.0%
5	Tailrace Tunnel Excavation	100.094.6%
6	P/H and Transformer Caverns Concrete	77.848.8%

The Lot 2 Contractor has installed the second stage embedded parts such as guide frames, sill beams, alignment bolts, and wall plates of dam stoplogs and dam radial gates No. 3 and 4. The Contractor is also continuing its work for design and fabrication according to its schedule. The Contractor has completed all design works and also fabrication works are nearly completed. The Lot 3 Contractor has started its installation works in the powerhouse. installed Spiral distributors and guide bearing housings installation works for Unit 1 to Unit 4 are ongoing, whereas pit liner installation work for Unit 5 is almost completed in all six units. The Lot 4 Contractor has completed the detailed survey of the transmission line route from Gongar to Khimti Substation. Land acquisition process has been initiated for first 35 km of approved section of the transmission line route alignment and tower foundation works will commence immediately after the ongoing monsoon season foundation works of 43 towers and erected erection works of 14 towers. The foundation works along with tower erection will be resumed immediately after the ongoing Monsoon Season. As the problem of land acquisition has not been resolved yet fully for new Khimti Sub-station, detail survey works around existing NEA and UTKHPL personnel are jointly seeking various alternatives in order to resolve this issue. Khimti Sub-station have been carried out to seek as an alternate option.

Impact of Recent Earthquakes

The commissioning of all six units and thereby overall completion of the project is targeted to be achieved by the end of July 2016. The large earthquake of 25 April, 2015 and subsequent aftershocks thereafter mainly that of 26 April and 12 May, 2015 have severely affected the project. Particularly, the access road to the project area has been seriously damaged. Though the road to the Gongar, the powerhouse area has been temporarily

opened, the road from Gongar to Lamabagar is still closed. The landslides and flashflood as consequences of the earthquakes eroded storage yard of Lot 3 Contractor sweeping away some containers with electro-mechanical equipment and washed away the belly bridge in Gongar. The huge landslides in Lamabagar exploded the bunker house containing about 15 MT of explosives thereby damaging entirely camp facilities of Nepal Army. Though there has been no significant damage to the underground structures after visual inspection, some differential movements at the contraction joint between the different structural blocks at the dam site have been observed. Particularly, there is differential vertical settlement of about 19 cm between the right abutment founded on the bed rock and the intake founded on the alluvium deposits. The Consultant, JVNL has submitted the report presenting the factual observation and remedial measures for the displacement at the dam site. The Panel of Experts (PoE) appointed by the project to serve in a technical advisory role to assess the seismic events and their consequences has submitted their final report offering additional insights and recommended actions as may be appropriate to advance the project and reduce future risks.

As all four main Contractors have evacuated their personnel from the site, the main construction works of the project have been stopped till date. Presently, some protection works are being undertaken along Tamakoshi River and Gongar Khola in order to protect the camp areas and access road. The main construction activities can only be resumed after the ongoing Monsoon Season. With further consideration of the delay of about one year due to the recent earthquakes, the project is expected to be commissioned by the end of December July 2017 only.

Rolwaling Diversion Scheme

UTKHPL has also appointed Lahmeyer International GmbH with association of Total Management Services (P) Ltd. and ITECO Nepal (P) Ltd. as the Consultant for , which is about 4 months delay from the base line schedule. This delay is mainly due to design modification of headrace tunnel and time taken in crack treatments of powerhouse crown etc.. However, this delay may further increase due to ongoing difficulties in the construction of vertical penstock shaft and stoppages of works in headrace tunnel downstream. The Detailed Engineering Design and Preparation of Bidding Document of Rolwaling Diversion Scheme, which will be developed as the second stage of the development of the project. The services, which were commenced from Match 2015 and are scheduled to be completed by the end of December 2015, will also be delayed for four months due to the recent earthquakes. will be carried out

in the current fiscal year for which the RFP documents have been issued to the short-listed consulting firms.

Tanahu Hydropower Limited (THL)

Tanahu Hydropower Limited (THL) is a subsidiary company of Nepal Electricity Authority (NEA) established in 2012 to develop 140 MW Tanahu Hydropower Project ("the Project") (formerly, Upper Seti Hydropower Project). The Project site is situated 150 km west of Kathmandu on Seti River near Damauli of Tanahu District in Gandaki Zone.

The Project is a storage type hydropower project with an estimated average annual energy generation of 587.7 GWh (Years 1-10) and 489.9 GWh (Year 11 onwards). The project is designed for peaking up to six hours in dry season. The main components of the Project are a 140 m high concrete gravity dam with a crest length of 175m on the Seti River and a reservoir with a total surface area of 7.26 km² at FSL (EL 415m). The waterway consists of a 7.4 m diameter, 1,203 m long headrace tunnel. A 117 m long 7.4m diameter tailrace tunnel will discharge the tail water back into the Seti River. An underground powerhouse measuring 27m wide x 46m high x 97m long will be built approximately 6 km (along the river course) downstream of the dam. Access roads (totaling 7.3 km) and several temporary and secondary access roads will provide access to the Project area. Temporary facilities include contractor's camps, equipment and maintenance yard, office areas, project staff's camp area.

The project will also include rural electrification (RE) and transmission lines (TL) component. A new 220 kV double circuits TL will evacuate the generated power to the Bharatpur Substation. The length of the transmission line corridor is 39 km. Additionally; the Project will electrify villages through its Rural Electrification (RE) Program in 18 VDC areas.

The project is being co-funded by Asian Development Bank (ADB), Japan International Cooperation Agency (JICA) and European Investment Bank (EIB). Loan agreement for an amount of US\$ 150 million was signed with ADB on February 21, 2013. Similarly, loan agreement for an amount of US\$ 183 million was signed with JICA on March 13, 2013 and loan agreement with European Investment Bank (EIB) was signed on May 7, 2013 for an amount of US\$ 70 million, which further increased to 85 million. Fund from GoN and NEA will be used for the preparation of preconstruction infrastructures.

ADB loan will be used for the construction of head works, rural electrification, transmission line, and that for JICA for the construction of tunnel, power house, and supply and installation of hydro-mechanical and electromechanical equipment. The project is planned to

commence the construction work in 2016 and complete in 2022.

Recently, THL has signed the contract agreement in June 29, 2015 with project supervision consultant (PSC) M/S Lahmeyer International in association with Manitoba Hydro. International, Canada ("the Consultant") for project supervision works. The consultant will work for twelve years in the project. The consultant will assist one year for pre-construction activities, six years for project construction and last five years for project operation.



RCC Bridge over Seti River



Proposed Dam site of Tanahu Hydropower Project



Under construction access road to Powerhouse site.

Trishuli Jal Vidhyut Company Limited (TJVCL)

Trishuli Jal Vidhyut Company Limited (TJVCL) is a joint venture company of Nepal Electricity Authority (NEA) and Nepal Doorsanchar Company Limited (NDCL) having equal equity share participation apart from other equity share holders. The main objective of this company is to develop the Upper Trisuli 3B Hydroelectric Project (37 MW) located in Nuwakot and Rasuwa District. This project is cascade project of Trisuli 3A Hydroelectric Project (60 MW) and therefore, operates with respect to Upper Trisuli 3A HEP. The equity share structure of the company is as follows:

➤ Nepal Electricity Authority:	30 %
➤ Nepal Telecom:	30 %
➤ VDCs and DDCs of Nuwakot and Rasuwa:	5 %
➤ Financial institutions formed by the natives of Rasuwa and Nuwakot District:	5 %
➤ Natives of project effected districts (Nuwakot and Rasuwa):	10 %
➤ General Public:	15 %
➤ Employees of NEA and Nepal Telecom in proportion to employees ratio:	5 %

Project Status

The feasibility study of the project has completed by Nepal Electricity Authority in fiscal year 2007/08. TJVCL has carried out the review of the project and updated the project parameters based on the site condition. The company TJVCL by its own engineer has completed the detail engineering design of the project in the fiscal year 2012/13.



Proposed Powerhouse site

The company has targeted to commission this project by the end of year 2019 AD. Following works has completed by the company:

- Acquisition of about 76 Ropanies of the private land has completed by the company.
- 60% of construction work of camp facilities has

completed.

- Power Purchase Agreement (PPA) with NEA is in process (connection agreement completed).
- For the project finance, consultation meeting has been conducted with the potential financing institutions such as a) Nepal Doorsanchar Company Limited, b) Provident Fund, c) CIT, d) HIDCL.
- Invitation letter has been issued to all VDCs and DDCs of Nuwakot and Rasuwa district for their promoters' shareholder participation.
- The International consultant "ELC Electroconsult S.P.A. Italy in association with Soil Test (P.) Ltd. Nepal" has started its Owner's Engineer for EPC construction of Upper Trishuli 3B Hydroelectric Project.
- Notice for Prequalification for the construction of Upper Trishuli 3B HEP in EPC model has been published. Shortlisting of the prequalified consultant shall be in place within two months.
- Award of the Test Adit Tunnel are in place and agreed to start the construction from 19th September 2015.
- The EIA study of Upper Trishuli 3B Hydroelectric Project (37 MW) has completed by ESSD, NEA and submitted to the Ministry of Environment for the final approval.

Power Transmission Company Nepal Limited (PTCN)

NEA, Power Trading Company of India (PTC India) and IEDCL India took initiative to facilitate the development of transmission interconnection between India and Nepal for the mutual interest and benefit of both the countries. For this purpose Power Transmission Company Nepal Limited (PTCN) and Cross Border Power Transmission Company India (CPTC) were established. Synchronized operation of the Nepal and Indian grids is the major objective of this project. It was planned that the transmission interconnection would be initially charged at 220 kV and operated in Synchronous mode between Indian and Nepalese Electrical grids. Due to unavailability of 400 kV substations at Dhalkebar, the charging of 400 kV Dhalkebar- Muzaffarpur double circuit transmission line in 132 kV voltages has been initiated. Right of Way clearance work and land acquisition for tower footing are in progress, which are the major challenges of this project.

The land acquisition process for Tower Pad has been completed and the acquisition of Right of Way is in process both in Dhanusha and Mahottari districts. Out of 112 towers, 105 Tower Foundations completed; 100 nos Tower Erection work completed. The total line length is 42.2 kms and out of which 32.5 kms Conductor stringing has been completed. The project is scheduled to be completed by August end 2015.

Central Activities

1. Internal Audit Department

The Internal Audit Department, guided by the Audit Committee and led by the Director is responsible for the planning, implementation and monitoring & evaluation of financial, technical and management audits based on enterprise risks. The department performs the aforesaid audits on quarterly basis and reports to the Audit Committee and Managing Director of NEA. Among these audits, financial audit is performed basically to help the final audit which is mandatory by law, and other audits are performed to evaluate the directorate-wise performance and to support managerial decision making. Though the internal audit report is remarkable and valuable to the organization, the implementation part is yet to be regarded by high level management for persistent commitment. As internal audit could play a vital role in enhancing NEA's performance in the sectors of internal control system, maintaining financial discipline, managerial efficiency and technical efficiency, it should be well-equipped with qualified, trained and motivated employees. The details of internal audit report shall be included in the Annual Audit Report of FY 2014/15.

The division-wise summaries of the audits performed during FY 2014/15 are given in the following paragraphs in brief:

Audit Committee:

As per international practices and to provide independency to the internal audit system as well as corporate governance, NEA has incorporated the concept of Audit Committee consisting of three members, headed by a member of the NEA Board and two peripheral sectoral experts. The committee is responsible for reviewing the accounts, financial statements and reports of final audit and conducting internal audit functions. Among other works, it has prepared the Audit Operating Procedures and submitted to the Board of Directors of NEA for approval.

Financial Audit:

The financial audit covers the audit of internal control system, compliance with existing rules and regulations, financial discipline and fairness of financial statements. During FY 2014/15, Financial Audits were carried out in 106 out of 147 (except small project offices) budget centers of NEA till the end of second quarter of FY 2014/15. The audit of the third quarter (Annual) has

already started from the month of August. The major non-compliances are excess expenditure against budget (Budgetary discipline), Stock purchasing, lack of proper metering and billing, cash shortage in counters not recovered timely, M-Power billing system not implemented to all revenue centers, physical verification of assets and inventory not done properly or not done timely by some offices. Financial Administration Bylaw of NEA has not been changed according to the Public Procurement Act on timely basis etc.

Technical Audit:

The technical audit covers the audit of technical norms and standards, guidelines, energy balance, preventive as well as breakdown maintenance, condition monitoring, energy optimization and electricity loss. Equipped with more technical staff than previous years, the division carried out technical audits of 32 offices during FY 2014/15, which was in excess of the initial target of 30. The division has set forth its target to conduct technical audit of all offices FY. The major non-compliances are excessive loss in some areas, improper energy metering practices, lack of preventive maintenance and record keeping delay in breakdown maintenance works and poor practices related to safety. The lack of well-equipped accredited laboratory to test the major technical goods purchased by NEA has not been established.

Management Audit:

The management audit covers the review and implementations of managerial plans, policies, procedures, programs and targets, procurement management, organization structure, job analysis, accountability and monitoring & evaluation. Due to deficiency of management audit staff, the division could carry out management audit of 44 offices including Regional and Directorate offices during FY 2014/15. The major non-compliance in management audit are the frequent changes in organization structure and Employee service by law, projects not completed in timely manner, employees transfer not done as per Employee Transfer Procedures, lack of performance based promotion system, lack of implementation of procurement planning and material management, lack of proper meter reading and vehicle management lack of effective Monitoring and Evaluation of offices by their concerned higher authority.

Risk Management Unit:

The Risk Management Unit, which is a relatively new concept for managing risks within the organization, has been recently established in Internal Audit Department. This unit has been formulated to collect risk information based on risk indicators and analyze and link them with other activities of the entity. It is also responsible for the establishment of directorate-wise enterprise risk management team and support the preparation of the directorate-wise enterprise risk framework for risk management. In this year, an initiative has been done to establish the directorate wise enterprise risk management team.

Capacity Building:

Capacity Building initiatives have a great importance to enhance the knowledge, skills, experience and behavioral changes of the audit staff. A customized training program was conducted for senior and junior officers in New Delhi by the Institute of Cost Accountants of India during June, 2014 to enhance their auditing skills and transfer professional knowledge related to performance auditing, procurement management, risk management, computer based IT auditing and other issues of internal audit. An initiative is taken to conduct a customized technical and performance audit training at NEA Training center in the coming FY.

Presentation and Interactions :

In the workshops organized by Distribution & consumer Service Directorate in each Regional offices, Internal Audit Department also presented the internal audit queries relating to concerned offices and discussed to rectify them. It would be better to continue this type of interactions to all Directorate as well.

Monitoring & Evaluation:

Internal Audit Department was involved in M/E of rectification of internal audit queries and related organizational performance basically in the sector of public service delivery. M/E reports, Appreciating good performer offices and need to further improvement in this sector had been recommended to Managing Director of NEA on timely basis.

2. NEA Board Matters:

The Minister of Energy Radha Kumari Gyawali is presently presiding the NEA Board since Baisakh 14, 2071. Likewise Energy Secretary Mr. Rajendra Kishor Chhettri joined the NEA Board as ex-officio member from Asadh 6, 2071 and then Finance Secretary Mr. Suman Prasad Sharma joined the NEA Board since Bhadra 6, 2071, as an ex-officio member.

During the Fiscal Year 2014/15, altogether 23 Board

meeting were held. Many important decisions relating to employee services by laws. Corporate structure, dedicated supply, bulk energy supply and other significant board decisions in this period under review.

3. Loss Reduction Division Loss & Leakage Control Activities:

Electricity theft, tampering of energy meters, leakage and loss control are the major issues focused by loss reduction division headed by Manager. Division has been continuously involving on inspection and monitoring of energy meters and responsible for conducting field raid operation as and when required.

Division is continuously providing its full effort to support additional revenue generation by controlling electricity theft, pilferage, tampering, outage, wrong MF calculation and even with wrong connection.

Target of Loss Reduction Division of FY 2071-072:

This fiscal year division has set target to recover 1500000 units through effective monitoring and inspection of different consumers focus on different regional office. The major concern is given to highly industrialized urban area where more numbers of ToD meters can be inspected. Division has also set target for monitoring, inspection and data download of rural community consumers. Beside the annual target division has also set target and conducted activities as directed by Managing Director, NEA as and when required.

Major Activities and Achievements of FY 2071-072:

This year division has performed its monitoring and inspection activities to the consumers of eighteen different distribution centers which are providing service under five different regional offices of NEA. This year around 482 ToD meters has been inspected and above 20% of the total number of inspected ToD is found with remarks. During inspection reverse unit, C.T./P.T outage are the major remarks found in the field. Four ToD meters are found having display out and two meters are found with missing multiplying factor. This year total 550733 units are found in reverse. The total units to be billed or to be verified for billing by concerned DCS are around 2119999.2 units. Furthermore, total units of ten ToD meters which are found with outage are still to be calculated by concerned DCS which are not included in the above calculation.

This year following units are recommended for billing by the division to concern regional office and DCS:

S.N.	Regional Office	Number of ToD meter inspected	Approximate Units to be billed	Remarks
1	Biratnagar RO	149	380920.3	Outage of 1-ToD meter is not quantified.
2	Janakpur RO	77	184199.9	Outage of 3-ToD and Display out of 3-ToD is not quantified.
3	Hetauda RO	147	186830.2	Outage of 4-ToD meter is not quantified.
4	Nepalgunj RO	50	1260434	
5	Kathmandu RO	59	107614.8	Outage of 2-ToD meter is not quantified.
	Total	482	2119999.2**	

**Total units to be billed should be verified by concerned DCS and report to division if already billed. The division could have achieved more units to recover if human resources are fulfilled according to its approved "Darbandi".

Administration Directorate

Administration wing of NEA is responsible for management of human resources, logistic support, legal advice and arbitration, property management and promotion of public relations functions. Timely amendment of Personnel Administration Regulation falls under the jurisdiction of this wing. This wing is led by a Deputy Managing Director and supported by four departments, namely, Human Resources Department, General Services Department, Legal Department and Recruitment Department each led by a Director.

Human Resource Department

Human Resource Department is responsible for executing manpower planning, recruitment, training and capacity development, disciplinary actions, implementation of staff welfare activities and other human resources related functions.

By the end of FY 2014/15, the total number of staff stood at 8433 while the approved positions remained at 11142. During the year under review 455 employees were retired of which 84 employees took voluntary retirement and services of 16 employees were terminated on charge of long absence. Similarly, 38 employees resigned and 36 employees passed away.

Similarly, 7 employees were suspended, promotion of 2 staffs was withheld and yearly increment in the salary of on staff was also withheld. As a part of staff welfare activities additional financial support was provided to 8 employees for treatment of different hard diseases and "Kaaj Kriya Anudan" was provided to 298 employees. Similarly, under the staff welfare loan facility a total sum of NRs. 7,08,96,500.00 was disbursed as loan to 805 employees for purchase, construction and maintenance of house/land, for carrying out social event/rituals and so forth. Similarly a sum of NRs. 2,48,07,919.27 was disbursed to 994 employee under accidental insurance and medical facility scheme and NRs. 21,01,83,297.94 was disbursed under life insurance scheme.

Employees Status FY 2014/2015

Level	Service	Approved Position			Existing situation			Total
		Regular	Project	Total	Permanent	Periodical	Daily wages / contract	
Managing Director		1	0	1	0	1	0	1
D M D (Level-12)		9	0	9	4	0	0	4
Officer Level (Level 6-11)	Technical	1201	159	1360	1051	0	1	1052
	Non-tech	550	25	575	531	1	0	532
	Total	1751	184	1935	1582	1	1	1584
Assistant Level (Level 1-5)	Technical	5884	0	5884	4474	22	37	4533
	Non-tech	3314	0	3314	2286	11	15	2312
	Total	9198	0	9198	6760	33	52	6845
Grand Total		10958	184	11142	8346	34	53	8433

The statistics of employed personnel till the end of fiscal year 2014/15 is given in the table above.

Recruitment Department

Recruitment Department is basically responsible for Recruitment and Promotion activities. The main function of Recruitment Department is to recruit the capable, efficient candidates in different required positions and to promote the capable, efficient employee to higher post. During the year under review 1263 employees of different levels were recommended to promote to

higher level. Among them 234 employees were based on seniority based, 303 employees were based on performance evaluation, 133 employees were based on internal competition and 593 employees were promoted on special provision. All together 841 succeed candidate were recommended to recruit in different level through open competition.

General Service Department

General Service Department (GSD) is unit responsible for vehicle management, logistics management, maintenance of vehicles and corporate office buildings, property management and security management of NEA's corporate offices. It also closely works with other departments regarding the property issued of NEA. The Department is also responsible for dealing with media, organizing press conferences and releasing ceremonial activities.

The Department also publishes Vidyut, a half yearly magazine which covers the wide spectrum of technical, managerial, administrative and other activities of NEA. It also appoints the advertising agency for the publication of various notices of NEA. The Department also registers the complaints from stakeholders regarding service delivery and forwards them to the concerned units for necessary action. During the year under review 440 such complaints were registered and forwarded to concerned units for the necessary actions. Out of 440 such complaints, 438 complaints were settled / addressed and remaining complaints are under settlement procedure.

During the year under review, the Department updated the records of land owned by NEA and their utilization. The total land available with NEA is 31,155-12-0-2 Ropanies as per record of Assets Management Section.

Legal Department

The Legal Department is responsible for dealing with legal matters of NEA. It provides legal advice to the management as well as to the different departments of NEA. The Department is also involved during negotiations for power purchase and contract agreements. Another area of its participation is to defend cases of NEA through NEA's legal advisors in different courts of the country and abroad for dispute resolution. Generally, cases to be resolved are related to the misuse of electricity, electricity theft and unauthorized use of electricity, and acquisition, employees service termination, staff promotion and contracts/tenders disputes. The Department also provides assistance to the various committees formed for formulating rules and regulations of the organization.

During the fiscal year under review, the Department provided 157 numbers of legal advices to the NEA Management & other departments. Out of 143 cases registered in different courts during fiscal year 2014/15, NEA won 20 cases, lost 1 case, partial 3 and 119 cases are under consideration in different courts. Some disputes related to contracts of construction projects are presently being resolved through arbitration and some others are under consideration.

Finance Directorate

The Finance wing, headed by a Deputy Managing Director (DMD), is responsible to carry out overall financial and accounting functions of NEA. Key responsibility areas include revenue administration, accounting system operation, budgetary control and treasury management. The finance wing is also responsible for financial planning, monitoring, and control at corporate level of decision-making process. Two functional departments, namely Accounts Department and Corporate Finance Department, are structured to support the finance wing. Accounts Department is responsible for consolidating overall accounts within NEA and prepares entity and group financial statements. It also deals with the statutory audit, taxation issues, follow up and settlement of internal and external audit qualifications. Likewise, Corporate Finance Department is entrusted to carry out various functions relating to revenue, budget, and treasury management. Both Departments are headed by an individual Director responsible for its functional areas of operation and report directly to the DMD, Finance. A separate project office, Institutional Strengthening Project, has been placed in operation to implement Integrated Financial Management Information System (IFMIS) under Accounts Department.

Energy generation from NEA's hydropower plants remained almost stable during the FY 2014/15, despite the damage caused by "Jure landslide" and massive earthquake in Sunkoshi Power Plant (10.05 MW). NEA recorded 2,365.64 GWh of hydro electricity generation including small power plants against the target generation of 2,347.27 GWh. NEA slashed down thermal energy generation to 1.24 GWh against the target generation of 50.76 GWh due to incurring high cost of fuel consumption. The plants were operated only for short period to meet peak load demand. NEA increased power import from India by 27.97 % as compared to previous year to minimize load shedding especially in dry season. Energy import from India was increased by upgrading conductor from Kushaha to Kataiya 132 KV second circuit, which was pending since last two years & additional import from Tanakpur from 20 MW to 35 MW as compared to previous year. Total energy import from India is recorded 1,369.89 GWh as compared to import of 1,070.47 GWh previous year. However, power purchase from IPPs within Nepal decreased to 1,268.93 GWh against the target purchase of 1,402.60 GWh. The reason behind this decrease was caused by non operation of Bhote Koshi

Power Plant(45MW) due to collapse of transmission line damaged by "Jure landslide" in the beginning of the FY and subsequently damage caused by massive earth quake in Sunkoshi river basin power plants and others plants situated in the largely earthquake affected areas. However, Power purchase from IPPs decreased only by 3.93% as compared to actual purchase in the year 2013/14. The total energy purchase constitutes 52 % from import and 48 % from local IPPs. Total energy available in the NEA's system increased by 6.80% over the previous year's figure of 4,687.09 GWh to reach 5,005.69 GWh. Out Of the total available energy NEA could supply only 3,743.75 GWh to its consumers and station consumption and system losses accounted for the rest. During the year, total energy sales increased by 7.08 %. The system losses reduced to 24.44% from 24.64% (provisional) in the FY 2014/15.

NEA's consumers increased from 2.71 million to 2.87 million including community and bulk buyer during the year. NEA could not meet total connections target of 3.05 million consumers due to shortage of energy meters during the year. The domestic consumer category, which holds 2.71 million consumers, continued to be the largest consumer category with 94.34 % share of entire consumers. Domestic and Industrial consumer category contributed 43.39% and 34.69 % to the gross electricity sales revenue respectively. Rest of the consumer category generated remaining 21.92 % of gross sales revenue.

NEA's total income including income from other services increased to NRs. 32,568.87 million as compared to NRs. 30,944.11 million in the previous year. The growth in the overall revenue income is about 5.26% as compared to previous year. During the FY 2014/15, gross sales revenue increased by 5.89 % amounting to NRs. 30,483.46 million. Out of the total revenue NEA allowed NRs. 610 million as rebate in order to encourage consumer to pay their bills earlier than credit period. Income from other service such as surcharge, dividend, lease rent, sale of goods and service charge amounted to NRs. 2,085.41 million.

NEA's overall operating expenses increased from NRs. 29,447.11 million in FY 2013/14 to NRs. 32,562.79 million for the year 2014/15. The increase in the expense is about 10.58 % as compared to the previous year. The power purchase expenses continued to be the largest cost component of the total operating expenses. NEA paid NRs. 19,849.75 million to the IPPs and for import from India during the FY 2014/15.

Energy from power purchase contributes 52.72 % of the total available energy for which NEA has paid 65.12% of total electricity sales revenue. The power purchase cost increased by 16.48 % for the FY 2014/15 due to increase in volume of purchase and to some extent of normal price escalation. Other operating expenses included generation, transmission, distribution and administration which reached NRs. 1,552.75 million, 581.92 million, 4,745.51 million and 1,226.80 million respectively.

Interest costs on long-term borrowings increased by 3.09 % over the previous year's figure to reach NRs. 4,365.54 million. Likewise, depreciation charge on fixed assets increased by 10.10% that accounted NRs. 3,629.56 million in the FY 2014/15. NEA realized foreign exchange translation gain of NRs. 513.29 million in FY 2014/15 due to appreciation of Nepalese Rupees vis-a-vis the Japanese Yen loan for Kulekhani Disaster Prevention Project. NEA has provisioned NRs. 2,053.40 million towards long term employee liabilities in respect of gratuity, pension, medical facilities and accumulated leave facilities under employees' benefit plan scheme.

This is yet another year for NEA to face deteriorating financial performance. Despite the growth in total revenue, it incurred a net loss of NRs. 6,460.04 million for the year under review. The major cause for attributing this loss is felt to be the higher cost of power purchase and other cost of services as compared to the electricity sales tariff.

The total receivables at the end of FY 2014/15 remained NRs. 9,475.42 million, which is equivalent to 111 day's sales revenue. Out of the total receivables, dues of street light with various Municipalities amounted to NRs. 2,761.65 million which is equivalent to 29.15% of total receivables.

Net carrying amount of property, plant and equipment reached to NRs. 84,368.67 million at the end of the FY 2014/15. During the year, NEA completed various distribution system reinforcement and rural area electrification projects resulting in capitalization of NRs. 3,759.51 million in non-current assets under the category of property, plant, and equipment. Property, plant and equipment constitutes 52.74% of total non-current assets of NEA.

NEA invested significant amount of resources in various projects relating to generation, transmission and distribution during the review period. Capital work in progress, the second largest element of non-current assets, figured to NRs. 59,070.79 million with addition of NRs. 15,836.38 million during the review Year 2014/15. The sources of investment included government equity and loan, foreign loan and grants and NEA's internal cash generation. The ongoing major hydroelectricity projects, namely Chameliyagadh (30 MW), Kulekhani III (14 MW),

Upper Trishuli 3A (60 MW) and Rahughat (32 MW) and various transmission systems of different voltage level contributed to increase capital work in progress.

NEA's investment in subsidiaries, associates, joint ventures and others reached NRs. 16,539.30 million in the year 2014/15. During the year, NEA increased its investment in subsidiaries and other companies by NRs. 4,251.04 million. NEA holds 11.58 million equity shares at a cost of NRs. 489.60 million in Chilime Hydro Power Company Limited (CHPCL), a subsidiary company of NEA. The total market value of the shares stood NRs. 19,489.14 million at the end of FY 2014/15. CHPCL has initiated to develop about 270MW projects namely Upper Sanjen HEP (14.8MW), Sanjen HEP (42.5MW), Middle Bhotekoshi (102MW) and Rasuwagadhi (111MW). NEA is committed to take 10% equity of each company, Sanjen Hydro Power Company Limited and Middle Bhotekoshi Hydro Power Company Limited and 18% equity of Rasuwagadhi Hydro Power Company Limited. During the year, NEA invested NRs. 948.60 million in different companies promoted by Chilime Hydro Power Company Limited. Investment in those company included NRs. 73.66 million in Sanjan Hydro Power Company Limited, NRs. 230 million in Middle Bhotekoshi Hydro Power Company Ltd. and NRs. 644.94 million in Rasuwagadhi Hydro Power Company Limited. In the FY 2014/15, NEA received 15% cash dividend and 20 % bonus share from CHPCL and 15% cash dividend from Butwal Power Company Limited. During the FY 2014/15, NEA, with its promoter Nepal Telecom, Citizen Investment Trust and Rastriya Beema Sansthan, invested NRs. 3,000 million by procuring under budgetary program from Nepal Government towards the loan capital for Upper Tamakoshi Hydro Power Company Limited under subsidiary financing agreement. At the end of the FY 2014/15, total investment in Upper Tamakoshi Hydro Power Company Limited reached NRs. 4,341.90 million as equity and NRs. 7,257.98 million as long-term loan. NEA holds 41% interest in equity share capital in Upper Tamakoshi Hydro Power Co. Ltd.

Other investment of NEA includes equity investment in Khumbu Bijuli Co (NRs. 20.65 million), Salleri Chaylsa Hydro Electric Co. Ltd. (NRs. 11.63 million), Nepal Engineering Consultancy Service Center Ltd. (2.28 Million), Nepal Hydro Lab Pvt. Ltd. (NRs.1 million), Power Transmission Company Nepal Limited (NRs. 132.5 million) and Butwal Power Company Ltd. (NRs. 16.01 million). NEA has not received any dividend except CHPCL and Butwal Power Company Limited (BPCL). During the year, NEA invested NRs. 40 million in Trishuli Hydro Power Co. Ltd. and NRs. 141.30 million in Tanahu Hydro Company Ltd. In addition to the above investment, NRs. 21.14 million was invested in the equity of Cross Border Power Transmission Company Limited. Deposits in CIT

against the future liabilities incurred towards employees benefit plan amounted to NRs. 1,066.24 million at the end of the FY 2014/15. Similarly, NEA holds deposit of NRs. 10 million in NEA Retirement Fund scheme as an equity capital in order to make the Fund approved by the Inland Revenue Department.

Government of Nepal (GoN) provided NRs. 6,363 million as long-term loan from local source to invest in different projects relating to generation, transmission and distribution. Likewise, NEA received NRs. 6,000 million as long-term loan from the donor agencies in the FY 2014/15. At the end of the financial year, total long-term borrowings from GoN, the main source of project financing, reached to NRs. 94,041.38 million from NRs. 82,691.67 million in FY 2013/14. During the FY 2014/15, NEA received NRs. 5,121.21 million from GoN as equity investment in various generation, transmission and distribution projects.

During the year, NEA paid NRs. 900 million as royalties, NRs. 600 million as interest on long term loan and NRs. 500 million as repayment of long term borrowings to GoN treasury. Additionally, NEA paid short-term borrowings amounting to NRs. 716.45 million to Citizen Investment Trust as full payment.

NEA is required to achieve a number of covenants in respect of borrowing from the donor agencies. Major covenants related to financial performance are Rate of Return (RoR) (6%), Debt Service Coverage Ratio (DSCR) (1.2 times), Average Collection Period (ACP) (< 3month). In FY 2014/15, NEA achieved RoR (2.54%), DSCR 0.41 and ACP 3.71 month which all are default.

NEA's electricity tariff was increased by Electricity Tariff Fixation Commission (ETFC) by 20% on an average after a gap of 11 years in FY 2011/12. However this increment was below the cost of service of NEA. NEA further proposed to upward adjustment in tariff by another 20% in 2012/13, which is not concluded till now.

Mr. Sudarshan Raj Pandey and Mr. Parakram Nath Sharma, Chartered Accountants, appointed by the Office of the Auditor General, jointly completed the statutory audit for the year 2013/14. Office of the Auditor General has reappointed the same Auditors to perform statutory audit for the Year 2014/15.

NEA's income tax assessment up to the FY 2009/010 has completed by Large Tax Payer's Office. However, NEA has filed petition for administrative review against tax assessment order for the FY 2009/10 to Inland Revenue Department. Similarly, NEA had appealed to the Revenue Tribunal against the assessment order given by Large Tax Payer's office for the year 2005/06 and 2006/07. Revenue Tribunal has settled the NEA's appeal but Large Tax Payer's office has not finalized reassessment of the same settlement. During the year, Large Tax Payer's office has initiated assessing tax liability for the FY 2010/11.

During the year, long pending audit qualifications of NRs. 0.35 million has been settled. NEA expects to settle remaining balance of NRs. 1.57 million by next year, which is being brought since FY 1993/94.

During the FY 2014/15, NEA has settled its long outstanding dispute with Impregilo Spa Viale, Italy, civil contractor for Kaligandaki 'A' Hydroelectricity Project, through Tax Settlement Commission by clearing up tax payable to GoN in behalf of Impregilo Spa. .

NEA has perceived the need for improvement in its current financial management system to meet the requirement of national and international accounting standards in preparation and presentation of financial statements. For strengthening financial accounting and financial management decision support system, NEA plans to put in place a modern IT based Integrated Financial Management Information System (IFMIS). Accordingly, Institutional Strengthening Project is under implementation with the assistance from World Bank to strengthen financial management and accounting system. MS Deloitte Touch Tohmatsu India Pvt. Ltd. (DTT) has been appointed as consultant for this project and has been working since December 2010. The major scope of the consultancy service includes Accounting Framework Reform, Design and Support for Implementation of new IFMIS & capacity building. During the year, based on request for proposal (RFP) issued by NEA two foreign companies have submitted their proposals to work as System Integrator. NEA has evaluated their detail technical proposal and forwarded to World Bank for final consent.

Nepal Electricity Authority

Highlights of FY 2014/15

Description	FY 2015*	FY 2014	Increase(Decrease)	
			Amount	%
Revenue				
Net Sale of Electricity (M.NRs.)	29,873.00	28,205.70	1,667.31	5.91
Income form other Services (M.NRs.)	2,085.41	2,156.90	(71.49)	(3.31)
Total Renueue (M. NRs.)	31,958.41	30,362.60	1,595.81	5.26
Operating Expenses:				
Genertion Expenses (M. NRs.)	1,552.75	1,886.51	(333.76)	(17.69)
Power Purchase (M. NRs.)	19,849.75	17,041.53	2,808.22	16.48
Royalty (M. NRs.)	976.50	888.67	87.83	9.88
Transmission Expenses (M. NRs.)	581.92	519.45	62.47	12.03
Distribution Expenses (M. NRs.)	4,745.51	4,575.15	170.37	3.72
Administration Expenses (M. NRs.)	1,226.80	1,239.19	(12.39)	(1.00)
Depreciation Expenses (M. NRs.)	3,629.56	3,296.62	332.94	10.10
Total Operating Expenses (M. NRs.)	32,562.79	29,447.11	3,115.68	10.58
Operating Surplus (M. NRs.)	(604.38)	915.49	(1,519.87)	(166.02)
Interest on Long-Term Loans (M. NRs.)	4,365.54	4,234.51	131.03	3.09
Foreign exchange tranlation losses (Gain)	(513.29)	(52.77)	(460.52)	872.74
Provision for Employee benefits	2,053.40	3,542.11	(1,488.71)	(42.03)
Prior years Income(Income) Expenses	(50.00)	(192.06)	142.06	(73.97)
Net Income (Loss) (M. NRs.)	(6,460.04)	(6,616.30)	156.27	(2.36)
Long-Term Loans (M. NRs.)	94,041.38	82,691.67	11,349.71	13.73
Net Property, Plant & Equipment (M. NRs.)	84,368.67	84,238.72	129.95	0.15
Number of Consumers	2,868,012	2,712,057	155,955	5.75
Total Sales of Electricity (GWh)	3,743.75	3,496.31	247.44	7.08
Internal Sold/Utilised (GWh)	3,740.54	3,492.91	247.63	7.09
Annual Average Consumer's Consumption (kWh)*	1,305.35	1,289.17	16.17	1.25
Average Price of Electricity (NRs./kWh)	8.14	8.23	(0.09)	(1.09)
Peak Load Interconnected System (GWh)	1,291.10	1,200.98	90.12	7.50
Toal Available Electric Energy (GWh)	5,005.69	4,687.09	318.60	6.80
NEA Hydro Generation (GWh)	2,365.64	2,288.23	77.41	3.38
Termal Generation (GWh)	1.24	9.65	(8.41)	(87.19)
Purchased Energy (GWh) - India	1,369.89	1,070.47	299.42	27.97
- Nepal (Internal)	1,268.93	1,318.75	(49.82)	(3.78)
Average Power Purchase Rate (NRs./kWh)***	7.52	7.13	0.39	5.46
Exported Energy (GWh)	3.21	3.40	(0.19)	(5.67)
Self Consumption (GWh)	38.54	36.09	2.45	6.79
Net System Losses (Percentage)	24.44	24.64	(0.20)	(0.79)

Note: *Provisional figures

**on internal sales

***on total purchase

Nepal Electricity Authority Statement of Financial Position as at July 16, 2015

Particulars	(NRs. in million)									
	2015*	2014	2013	2012	2011	2010	2009	2008	2007	2006
Assets										
Non Current Assets										
Property, Plant & Equipment	84,368.67	84,238.72	83,873.47	85,460.71	84,725.47	83,105.63	81,238.50	52,030.28	51,781.76	51,743.38
Capital Work in Progress	59,070.79	46,993.93	39,843.17	29,905.45	22,832.03	17,040.47	13,550.46	35,699.71	29,145.19	21,991.50
Investments	16,539.30	12,288.26	6,807.56	5,049.17	4,855.07	3,122.06	2,139.92	1,620.19	882.05	819.90
Deferred Expenditure to be Written Off			-	-	-	323.68	361.22	423.33	130.94	32.40
Total Non-Current Assets	159,978.77	143,520.91	130,524.20	120,415.33	112,412.57	103,591.84	97,290.10	89,773.51	81,939.94	74,587.18
Current Assets :-										
Inventories	3,206.01	2,859.44	3,043.02	3,033.83	2,502.93	2,431.99	2,159.12	1,800.13	1,498.45	1,354.80
Trade and other Receivables	9,475.42	9,015.61	7,930.03	6,693.17	6,871.19	6,097.74	4,854.02	5,721.08	5,151.41	4,415.40
Cash and Cash Equivalents	5,050.00	6,121.57	4,714.98	2,697.48	2,016.58	1,244.65	1,724.76	1,337.15	1,447.58	1,258.60
Prepaid, Advances, Loans and Deposits	4,045.62	3,644.70	3,300.57	4,222.65	2,976.82	4,585.60	2,495.13	2,319.72	2,225.53	2,293.90
Total Current Assets	21,777.06	21,641.33	18,988.60	16,647.13	14,367.52	14,359.98	11,233.03	11,178.08	10,322.97	9,322.70
Total Assets	181,755.82	165,162.24	149,512.80	137,062.46	126,780.09	117,951.82	108,523.13	100,951.59	92,262.91	83,909.88
Equity and Liabilities										
Capital and Reserves										
Share Capital	49,631.95	44,510.75	37,364.90	31,422.44	25,694.81	38,651.77	33,659.46	28,609.97	26,382.18	23,113.10
Reserves and Accumulated Profits:										
Reserve	1,908.53	1,908.53	1,721.41	1,706.03	1,677.55	1,631.30	1,497.85	1,407.83	998.92	550.49
Accumulated Profits (Loss)	(26,798.62)	(20,238.58)	(13,238.16)	(9,866.97)	0.00	(21,022.36)	(14,098.83)	(8,985.61)	(6,650.04)	(6,095.81)
Total Equity	24,741.86	26,180.69	25,848.15	23,261.50	27,372.36	19,260.71	21,058.48	21,032.19	20,731.06	17,567.78
Non-Current Liabilities										
Borrowings	94,041.38	82,691.67	75,034.89	68,909.20	62,631.85	58,231.66	53,788.45	51,368.84	47,616.15	46,487.91
Deferred Tax	693.20	693.20	693.20	693.20	693.20	693.20	693.20	791.01	848.40	-
Total Non-Current Liabilities	94,734.59	83,384.87	75,728.09	69,602.40	63,325.05	58,924.86	54,481.65	52,159.85	48,464.55	46,487.91
Current Liabilities										
Borrowings	-	700.00	1,200.00	3,500.00	790.00	1,280.00	250.00	1,140.00	-	700.00
Sundry Creditors and Other Payables	42,966.52	37,637.22	33,019.22	29,137.09	27,825.95	32,909.45	29,402.22	24,534.17	22,374.17	18,444.39
Provisions	19,312.85	17,259.45	13,717.34	11,561.47	7,466.73	5,576.80	3,330.78	2,085.38	693.13	709.80
Total Current Liabilities	62,279.38	55,596.67	47,936.56	44,198.56	36,082.68	39,766.25	32,983.00	27,759.55	23,067.30	19,854.19
Total Liabilities	157,013.96	138,981.55	123,664.65	113,800.96	99,407.73	98,691.11	87,464.65	79,919.40	71,531.85	66,342.10
Total Equity and Liabilities	181,755.82	165,162.24	149,512.80	137,062.46	126,780.09	117,951.82	108,523.13	100,951.59	92,262.91	83,909.88

Nepal Electricity Authority

Income Statement for the year ended July 16, 2015

(NRs in million)

Particulars	2015*	2014	2013	2012	2011	2010	2009	2008	2007	2006
Sales	29,873.00	28,205.70	25,354.62	20,088.64	17,946.82	17,164.60	14,405.93	15,041.39	14,449.73	13,331.90
Cost of Sales :										
Generation	1,552.75	1,886.51	1,604.31	1,147.69	929.56	1,541.27	1,119.71	979.76	855.64	811.12
Power Purchase	19,849.75	17,041.53	13,572.46	11,948.41	10,493.74	9,746.57	7,691.28	7,437.04	6,967.58	6,391.95
Royalty	976.50	888.67	890.49	941.60	854.76	849.77	796.12	839.18	970.47	897.50
Transmission	581.92	519.45	416.74	421.38	345.96	337.73	328.16	274.85	240.88	232.13
Gross profit	6,912.08	7,869.54	8,870.62	5,629.56	5,322.80	4,689.26	4,470.66	5,510.56	5,415.16	4,999.20
Other Income	2,085.41	2,156.90	1,868.37	1,695.42	1,382.94	1,188.27	1,601.67	934.66	1,016.61	639.90
Distribution Expenses	4,745.51	4,575.15	4,087.97	3,685.15	3,004.18	3,091.21	2,575.09	2,110.01	1,834.39	1,703.70
Administrative Expenses	1,226.80	1,239.19	1,327.50	973.38	866.74	789.52	651.69	683.98	479.60	419.50
Interest Expenses	4,365.54	4,234.51	4,039.65	3,885.49	3,594.01	3,668.65	2,492.55	2,274.37	2,385.41	3,050.90
Depreciation	3,629.56	3,296.62	3,228.68	3,175.80	3,031.33	2,902.92	2,361.20	1,895.17	1,856.47	1,816.90
Loss (Gain) on Foreign Exchange	-513.29	-52.77	-652.14	896.57	85.01	28.67	813.96	484.10	-493.39	42.70
Provision for losses on property, plant & equipment	-	-	-	-	-	-	-	60.00	60.00	65.00
Provision under Employees' Benefits Plan	2,053.40	3,542.11	2,112.74	4,106.68	1,890.01	2,246.02	1,246.00	1,354.00	-	-
Street light dues written off	-	-	-	549.79	-	-	863.00	-	-	-
Deferred Expenditure Written Off	-	-	-	-	323.68	112.36	96.68	108.51	42.56	105.40
Net Profit/(Loss) before Tax	-6510.04	-6808.36	-3405.41	-9947.88	-6089.22	-6961.82	-5027.84	-2524.92	266.73	-1565.00
Deferred Tax Expense (Income) recognised	-	-	-	-	0.00	0.00	97.80	57.39	73.47	0.00
Net Profit (Loss) after Tax	-6510.04	-6808.36	-3405.41	-9947.88	-6089.22	-6961.82	-4930.04	-2467.53	193.26	-1565.00
Net Profit (Loss) as per Last Account				0.00	-21022.36	-14098.83	-8985.61	-6650.04	-6095.81	-4808.01
Prior years (Income) Expenses	-50.00	-192.06	-34.21	-80.91	76.61	-38.29	163.18	-151.96	727.49	-297.20
Total Profit Available for Appropriation	-6460.04	-6616.30	-3371.20	-9866.97	-27188.19	-21022.36	-14078.83	-8965.61	-6630.04	-6075.81
Appropriation for Insurance Fund	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.00	20.00	20.00
Accumulated Loss Adjusted	0.00	0.00	0.00	0.00	27188.19	0.00	0.00	0.00	0.00	0.00
Profit (Loss) transferred to Statement of Financial Position	-26798.62	-20238.58	-13238.17	-9866.97	0.00	-21022.36	-14098.83	-8985.61	-6650.04	-6095.81

Significant Accounting Policies

For the year ended July 16, 2015 (Ashad 31, 2072)

Constitution and Ownership

Nepal Electricity Authority ('NEA') was incorporated on Bhadra 1, 2042 (16 August, 1985) under the Nepal Electricity Authority Act, 1984, through the merger of the Department of Electricity of Ministry of Water Resources, Nepal Electricity Corporation and related Development Boards. The merger was necessitated to remedy the inherent weaknesses associated with these fragmented electricity organizations with overlapping and duplication of works, and became necessary to achieve efficiency and reliable service.

The principal objectives of NEA include generation, transmission and distribution of adequate, reliable and affordable electric power by planning, constructing, operating such facilities in Nepal's power system both interconnected and isolated.

Significant Accounting Policies

Basis of preparation of Financial Statements

The financial statements have been prepared in accordance with Nepal Accounting Standards (NAS) and Generally Accepted Accounting Principles and practices following historical cost conventions. These standards and practices are substantially in line with the principles set out in IFRS.

The preparation of financial statements requires NEA's management to make estimates and assumptions that affect the reported balance of assets and liabilities, revenues and expenses and disclosures relating to the contingent liabilities. The management believes that the estimates used in preparation of the financial statements are prudent and reasonable and management is aware that future results could differ from these estimates. Any revision to accounting estimates is recognised prospectively in the current and future periods. Examples of such estimates include provision for employee benefits, net realisable value of inventory, diminution in value of long-term investments and non-recoverability of receivable balances etc.

The figures for the previous year are rearranged and reclassified wherever necessary for the purpose of comparison.

Appropriate disclosures are made for the effect of any change in accounting policy, accounting estimate and adjustment of error.

The financial statements are prepared, generally, on accrual basis. However, some income and expenses

are accounted on a cash basis, for practical reasons. Management believes that the impact of recognising those revenues on cash basis will not be materially different from the current practice.

Management has applied estimation while presenting financial statements. Such specific estimates are disclosed in individual sections wherever they have been applied.

Foreign Currency Transactions

The transactions in foreign currency are recognised at the prevailing rate on transaction date. The balances of monetary assets and liabilities in foreign currencies are translated at closing rate. The resulting gain or loss due to the translation is taken to profit and loss.

1.2.1 Functional and Presentation Currency

Items included in the financial statements of the Company are measured and presented using the currency of the primary economic environment in which the Authority operates (the functional currency), which is the Nepalese Rupees (indicated as Rs. in short).

Property, Plant and Equipment

Property, plant and equipment are stated at cost of acquisition and/or cost of construction less accumulated depreciation. The cost of property, plant and equipment include cost of acquisition or construction/erection together with other incidental costs and charges attributable to bringing the asset to its working condition for its intended use and also include borrowing costs directly attributable to the acquisition, construction/erection of qualifying asset.

The incidental costs include proportionate overheads relating to the following offices at the rates given below:

(a) Planning	50%
(b) Distribution and Consumer	10%
(c) Engineering	50%
(d) Finance and Administration	10%

Depreciation

Depreciation is provided on Property, Plant and Equipment, except land, on straight-line method, based on the estimated useful lives of those assets. The rates of depreciation applied on property, plant and equipment are as follows:

Assets Category	Depreciation Rate (per annum)	
(a)	Land	-
(b)	Buildings	2%
(c)	Hydro Electric Structures	2%-3%
(d)	Hydro Electric Plant & Machinery	3%
(e)	Internal Combustion on plant & machinery	2.5%
(f)	Transmission lines (66 KV, 132 KV and above)	3%
(g)	Transmission lines (33 KV)	3%
(h)	Transmission Substations	3%
(i)	Distribution system (including < 11 KV Transmission lines)	3%-4%
(j)	Solar Power	3%
(k)	Meter & metering equipment	10%
(l)	Consumer Services	7%
(m)	Public lighting	3%
(n)	Vehicles, tools and instruments, furniture and fixtures.	20%
(o)	Office Equipment	15%
(p)	Miscellaneous properties	50%
(q)	Additions during the year	50% of applicable rates

Capital Work in Progress (CWIP)

All expenditures in developing property, plants and equipment not yet completed or not ready to use are categorised as CWIP. The value of Capital works-in-progress includes stock of equipment lying in store or in transit for the purpose of use in the construction or development. It also includes the balances with contractors and suppliers for the value yet to be received. These are capitalised upon commissioning or identified as being ready to use.

Investments in Shares

All investments in shares are carried at cost. Write-downs are made for impairment, if any, in the value of such investments. Bonus shares issued by investee companies have not been accounted in books. However, total number of bonus shares received has been disclosed with initial investment.

Inventories

Inventories include goods in hand being held for use, sale or as spares.

Inventories are valued at lower of cost or net realisable value, using the weighted average method.

Net realizable value is the sale price as estimated by the management in the ordinary course of business, less estimated costs, if any, necessary to make the sale. Further, adjustments are made for those inventories identified by management as obsolete or otherwise.

Trade Receivables

Trade receivable are stated at carrying values except for those identified by the management as being doubtful on recovery. Such estimations for doubtful recovery are reviewed by the management regularly.

Cash and Cash equivalents

Cash and cash equivalents are carried at cost. They include cash-in-hand, cash-in-transit (bank transfers and cheques in collection which are collected in the subsequent period), and deposits with banks in the various forms of deposit accounts which may or may not bear interest, but which are not of the nature of investments.

Borrowings

Borrowings that are due after 12 months from the date of the financial position are classified as non-current liabilities and those less than 12 months are classified as current liabilities. Borrowing costs that are directly attributable to the construction of a qualifying asset are included in the cost of that asset. Other borrowing costs are treated as an expense in the period in which it occurs.

Foreign Currency Loans

Liabilities on foreign currency loans as at the year ended are converted into Nepali Rupees by applying prevailing year-end exchange rates. The gain /loss arising there from such transaction are recognised as profit or loss.

Trade and Other Payables

Liabilities for creditors and other payables are carried at cost which is the fair value of the consideration to be paid in the future for the goods / services received, whether or not billed to the Company.

Provisions

Provisions are recognised when the Authority has a present legal or constructive obligation as a result of past events, it is probable that an outflow of resources embodying economic benefits will be required to settle the obligation and the reliable estimate of the amount can be made.

Recognition of Provisions involves substantial degree of estimation in measurement. Provisions are reviewed at each statement of financial position date and are adjusted to reflect the current best estimate.

Employee Benefits

Employee benefits, other than retirement benefits, are accounted for in the period during which the services have been rendered on accrual basis.

For Retirement Benefits Plans

Defined Contribution Plans (such as Provident Fund, Retirement Fund and Insurance Schemes) expenses are charged to income statement on the basis of the liability recognised for the period.

Defined Benefit Plans (such as Gratuity, Pension, Leave Encashment and Medical Benefits) expenses are charged to the income statement on the basis of actuarial valuation.

Grant-in-Aid, Contribution from Customer/Local Authority

Grants-in-Aid received from the GoN or other Authorities towards capital expenditure as well as consumers' contribution to capital work are treated initially as Capital Reserve and subsequently adjusted as income in the same proportion as depreciation is charged on such assets.

Contingent Liabilities

Contingent liabilities are disclosed in respect of possible present obligations that have arose from past events but their existence can only be confirmed on occurrence or non occurrence of one or more uncertain future events not wholly within the control of NEA and possibility of outflow of resources is not determinable.

Revenue from Sale of Electricity

Revenue from sale of electricity is recognised at the time of raising bills to the customers as per the billing

cycle. Revenue from the billing cycle date up to Ashad End (Mid-July) has been recognised on estimated basis. Revenue from sale of electricity is shown net of rebate. Rebate on payment before due date, surcharge on delayed payment & penalty chargeable on late commercial operation date (COD) are accounted for on cash basis.

Income from Other Sources

Interest on investments and rental income are recognised on accrual basis.

Dividend on investment in shares is recognized when right to receive has been established.

Revenue from other services, including services provided by Engineering Services, is recognised on cash basis.

Insurance Fund

Insurance fund is created by setting aside a sum of Rs. 20 million every year, in case of profit for the year, to cover any loss of property, plant and equipment, for any eventuality.

Taxes

Current tax

Current Tax is determined as the amount of tax payable in respect of taxable income for the year.

Deferred tax

Deferred tax is recognised on temporary difference, being the difference between tax base of assets and liability and carrying amount thereto. Where there is carry forward losses, deferred tax asset are recognized only if there is virtual certainty of realization of such assets. Other deferred tax assets are recognised only to the extent there is reasonable certainty of realisation in future.

Tariff Rates

Billing Effective since August 17, 2012

1 DOMESTIC CONSUMERS			
1.1) Low Voltage (400/230 V)			
A		Minimum Monthly Charge:	
	METER CAPACITY	Minimum Charge (NRs.)	Exempt (kWH)
	Up to 5 Ampere	80.00	20
	15 Ampere	365.00	50
	30 Ampere	795.00	100
	60 Ampere	1765.00	200
	Three phase supply		
	Up to 10 KVA	4400.00	400
	Above 10 KVA to 25 KVA	6900.00	600
B Energy Charge: (Single Phase)			
	Energy Consumption Block	Rate NRs. (Per Unit)	Billing Method
1	Up to 20 Units	4.00	Minimum Charge
2	21- 50 Units	7.30	Up to 20 units Rs. 4.00/unit, for 21-30 units Rs.7.30/unit. But, for energy consumption above 30 units, consumption from 1 unit itself shall be charged at Rs. 7.30/unit.
3	51-150 Units	8.60	Rs. 7.30/unit for 0-50 Units and Rs. 8.60/unit for 51-150 Units .
4	151-250 Units	9.50	Rs. 8.60/unit for 0-150 Units and Rs. 9.50/unit for 151-250 Units .
5	Above 250 Units	11.00	Rs. 9.50/unit for 0-250 Units and Rs. 11.00/unit above 250 Units.
C Energy Charge: (Three Phase)			
1	Up to 10 KVA	12.00	Minimum charge Rs.4400.00 for Consumption up to 400 Units and Rs.12.00/unit above 400 Units.
2	Above 10 KVA up to 25 KVA	12.50	Minimum charge Rs.6900.00 for Consumption up to 600 Units and Rs.12.50/unit above 600 Units.
1.2) Medium Voltage (33/11 K.V.)			
A		Minimum Monthly Charge:	
	METER CAPACITY	Minimum Charge (NRs.)	Minimum Unit kWH
	Above 25 KVA	31250.00	2500
B Energy Charge			
	Energy Consumption Block	Rate NRs. (Per Unit)	Billing Method
	Above 25 KVA	12.90	Minimum Charge Rs. 31,250.00 for consumption up to 2500 Units and Rs. 12.90/unit above 2500 Units.

2 OTHER CONSUMERS			
2.1 Low Voltage (400/230 Volt)		Rate (NRs.)	
S.N.	Consumer Category	Demand Charge Rs./KVA/month	Energy Charge Rs./Unit
1	Industrial		
	a) Rural and domestic	55.00	6.50
	b) Small Industry	100.00	8.00
2	Commercial	295.00	9.35
3	Non-Commercial	195.00	10.00
4	Irrigation		3.60
5	Water Supply		
	a) Community Water Supply	140.00	4.30
	b) Other Water Supply	210.00	6.00
6	Temple		5.10
7	Street Light		
	a) Metered		6.10
	b) Non Metered	2250.00	
8	Temporary Supply		16.50
2.2 High Voltage			
a) 66 kV or above			
1	Industrial	220.00	6.25
b) Medium Voltage (33 kV)			
1	Industrial	230.00	7.00
2	Commercial	285.00	9.00
3	Non-Commercial	220.00	9.50
4	Irrigation	50.00	4.00
5	Water Supply		
	a) Community Water Supply	200.00	5.00
	b) Other Water Supply	200.00	5.50
6	Transportation		
	a) Trolleybus	230.00	5.30
	b) Other Transportation	230.00	7.20
c) Medium Voltage (11 kV)			
1	Industrial	230.00	7.20
2	Commercial	285.00	9.25
3	Non-Commercial	220.00	9.60
4	Irrigation	50.00	4.10
5	Water Supply		
	a) Community Water Supply	200.00	5.20
	b) Other Water Supply	200.00	5.70
6	Transportation		
	a) Trolleybus	230.00	5.30
	b) Other Transportation	230.00	7.30
7	Temple	200.00	8.25
8	Temporary Supply	300.00	10.00

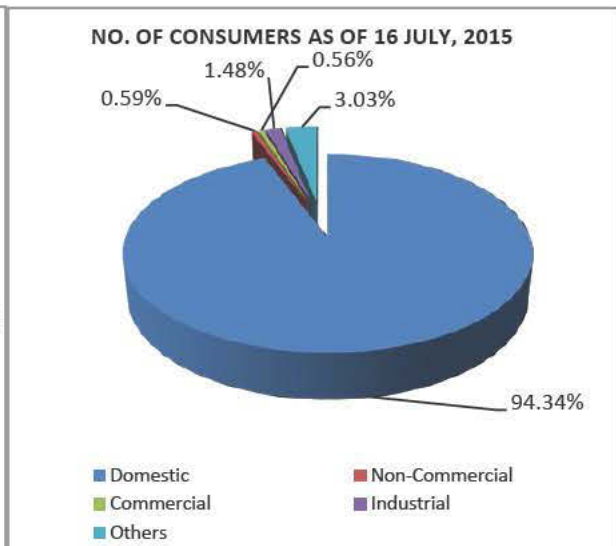
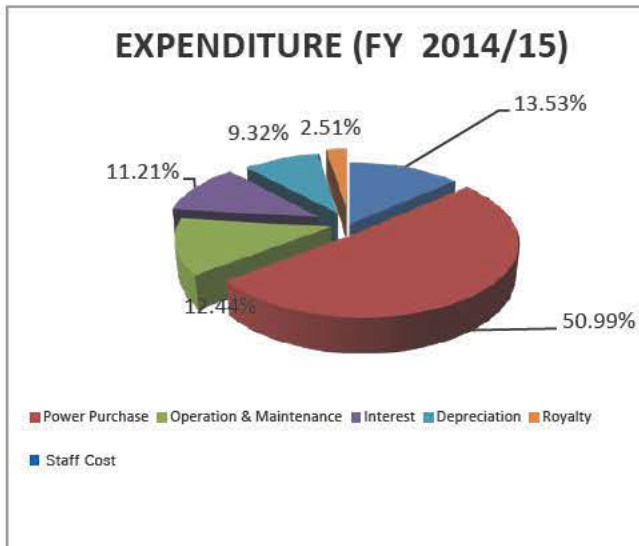
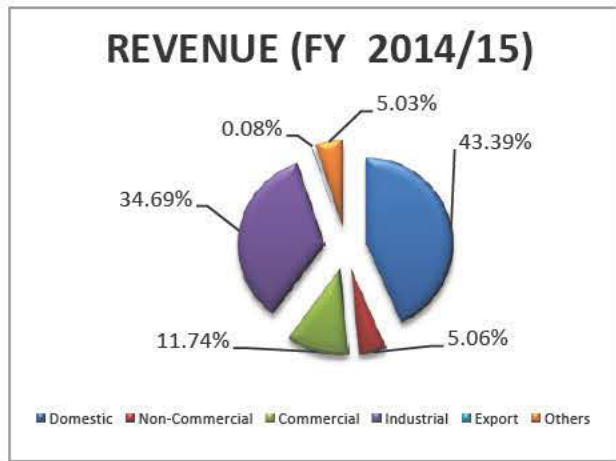
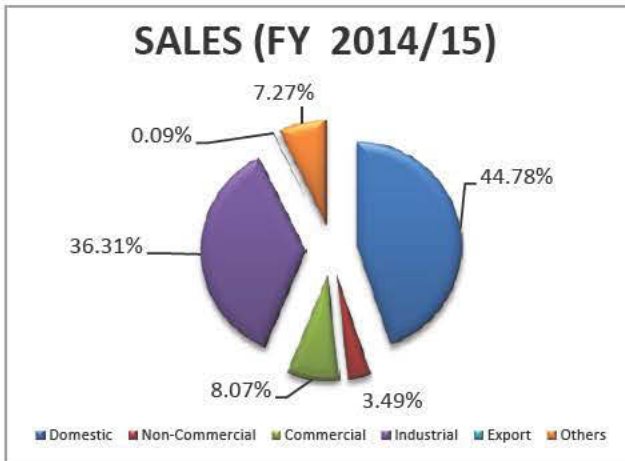
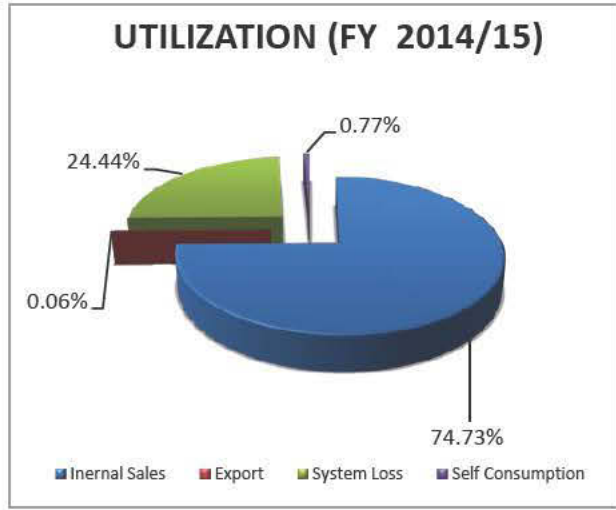
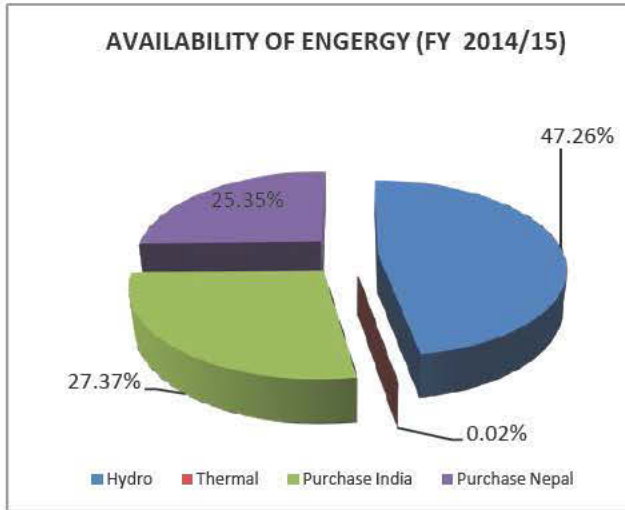
3 TIME OF DAY (TOD) TARIFF RATE					
S.N.	Consumer Category	Monthly Demand Charge (Rs.)	Energy Charge (Rs./Unit)		
			Peak Time 17:00-23:00	Off-Peak 23:00-5:00	Normal 5:00-17:00
a) 66 kV or above					
1	Industrial	220.00	7.75	3.30	6.25
b) Medium Voltage (33 kV)					
1	Industrial	230.00	8.50	4.20	7.00
2	Commercial	285.00	10.25	5.40	9.00
3	Non-Commercial	220.00	11.00	5.60	10.00
4	Irrigation	50.00	5.25	2.50	3.90
5	Water Supply				
	a) Community Water Supply	200.00	6.10	2.90	4.90
	b) Other Water Supply	200.00	8.50	4.20	7.00
6	Transportation				
	a) Trolleybus	230.00	6.35	3.10	5.20
	b) Other Transportation	230.00	8.50	3.10	7.00
7	Street Light	70.00	7.00	2.80	3.50
c) Medium Voltage (11 kV)					
1	Industrial	230.00	8.75	4.30	7.10
2	Commercial	285.00	10.50	5.50	9.25
3	Non-Commercial	220.00	11.25	5.70	10.20
4	Irrigation	50.00	5.30	2.80	3.95
5	Water Supply				
	a) Community Water Supply	200.00	6.20	3.50	5.10
	b) Other Water Supply	200.00	8.75	4.30	7.10
6	Transportation				
	a) Trolleybus	230.00	6.50	3.50	5.30
	b) Other Transportation	230.00	8.75	3.50	7.10
7	Street Light	70.00	7.35	3.00	3.65
8	Temple	200.00	9.40	4.10	7.60
9	Temporary Supply	300.00	12.00	5.25	9.80
4 COMMUNITY WHOLESALE CONSUMER					
	Voltage Level		Energy Charge (Rs./Unit)		
a) Medium Voltage (33 kV/11 kV)					
	Up to (N X 30) Units		3.50		
	Above (N x 30) Units		5.00		
b) Low Voltage (400/230 Volt)					
	Up to (N X 30) Units		3.50		
	Above (N x 30) Units		5.25		

N= Total Number of Consumers of a community group.

Notes:

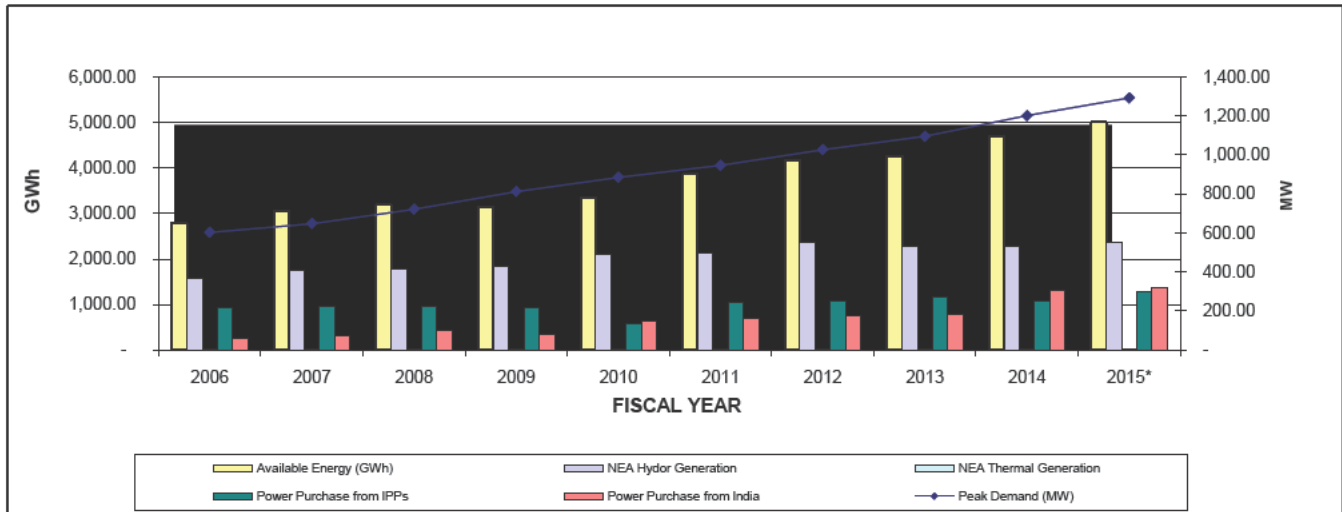
- 1) Low voltage refers to 230/400 V, Medium voltage refers to 11 kV / 33 kV and High voltage refers to 66 kV and above.
- 2) If Demand Meter of any consumer reads kilowatts (kW), then kVA=kW/0.8. Consumers having kW demand meter shall mandatorily install Capacitors within the given time. Otherwise their kVA demand shall be calculated as kVA=kW/0.7.
- 3) 10% Discount in the total bill amount will be given to the GoN approved Industrial Districts, if the bill is paid within 21 days of billing date.
- 4) 20% Discount in the total bill amount will be given to the Nepal Government Hospitals and Health Centres (except residential complex), if the bill is paid within 21 days of billing date.
- 5) Consumers supplied at High Voltage (66 kV and above) and Medium Voltage (33 kV and 11 kV) should compulsorily install TOD Meters.
- 6) If new additional consumers applying for 11 kV supply are to be supplied at 33 kV, they will be charged as per 11 kV tariff structure.

Statistics & Schematics



Total Energy Available & Peak Demand

Total Energy Available
& Peak Demand

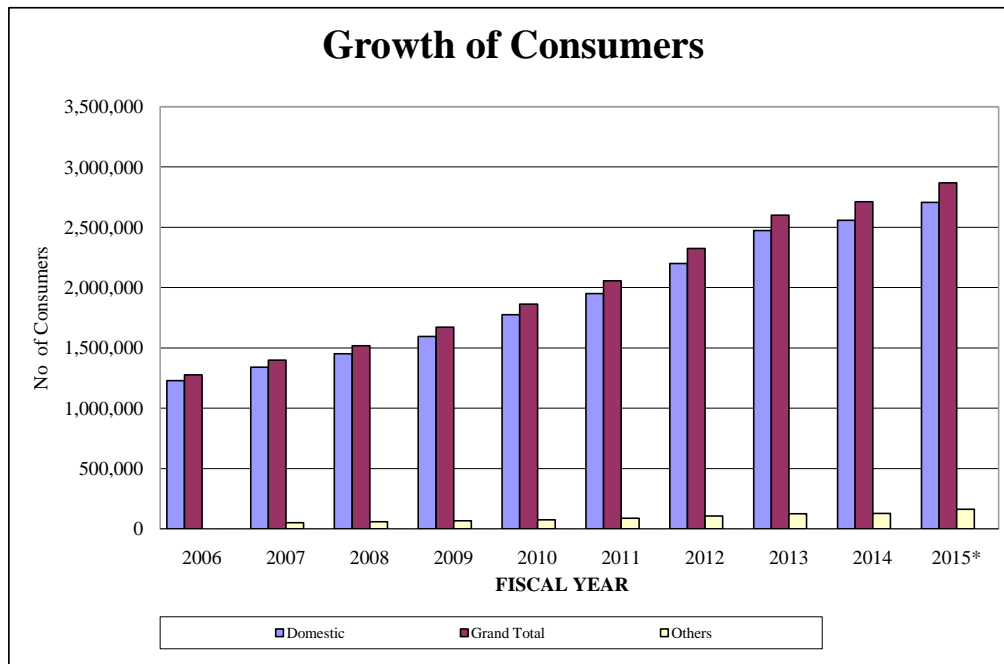


Particulars	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Peak Demand (MW)	603.28	648.39	721.73	812.50	885.28	946.10	1,026.65	1,094.62	1,200.98	1,291.80
NEA Hydor Generation	1,568.55	1,747.42	1,793.14	1,839.53	2,108.65	2,122.08	2,357.43	2,273.11	2,288.23	2,365.64
NEA Thermal Generation	16.10	13.31	9.17	9.06	13.01	3.40	1.56	18.85	9.65	1.24
NEA Generation Total (GWh)	1,584.65	1,760.73	1,802.31	1,848.59	2,121.66	2,125.48	2,358.99	2,291.96	2,297.88	2,366.88
Power Purchase from India	266.23	328.83	425.22	356.46	638.68	694.05	746.07	790.14	1,318.75	1,369.89
Power Purchase from IPPs	930.04	962.26	958.42	925.74	591.43	1,038.84	1,073.57	1,175.98	1,070.47	1,268.93
Power Purchase Total (GWh)	1,196.27	1,291.09	1,383.64	1,282.20	1,230.11	1,732.89	1,819.64	1,966.12	2,389.21	2,638.81
Available Energy (GWh)	2,780.92	3,051.82	3,185.95	3,130.79	3,351.77	3,858.37	4,178.63	4,258.08	4,687.09	5,005.69

Note :- Peak demand is for all areas covered by integrated system including supply to India

* Provisional figures

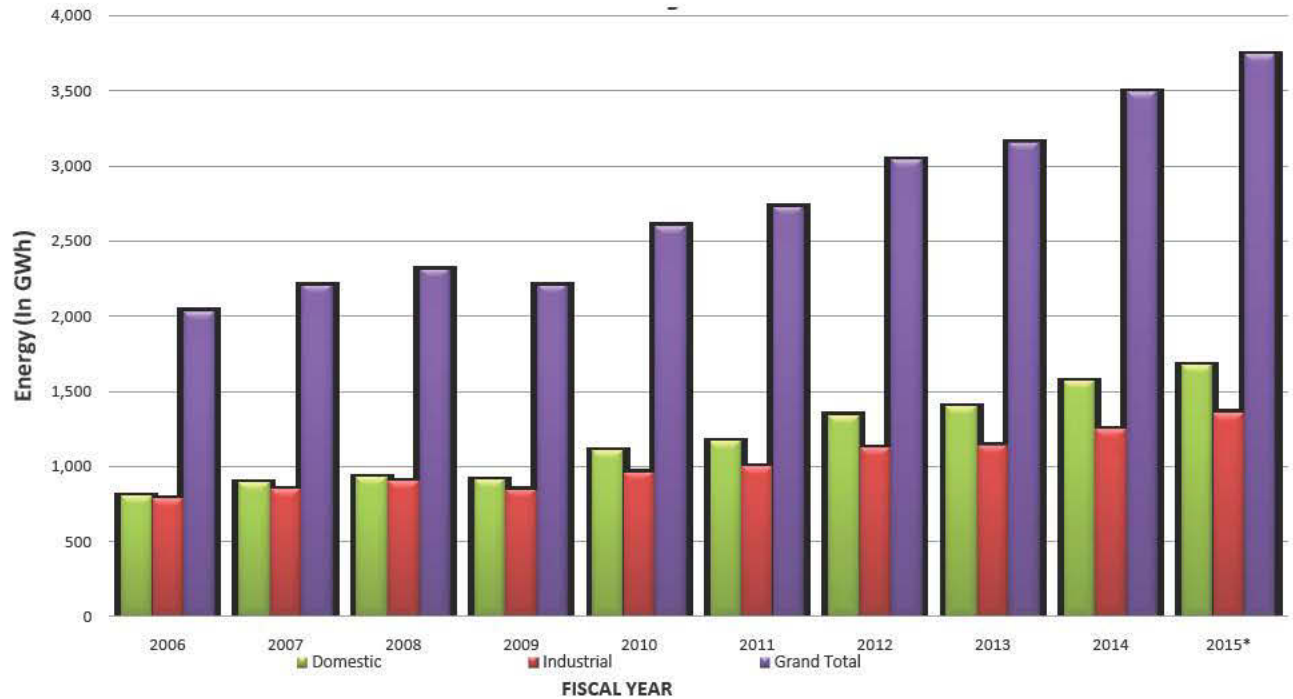
Growth of Consumers



Particulars	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Domestic	1,227,295	1,339,253	1,450,254	1,595,015	1,775,571	1,949,530	2,198,680	2,472,264	2,558,726	2,705,732
Non-Commercial	10,010	10,215	10,556	10,518	10,952	12,520	14,055	15,179	16,155	16,942
Commercial	6,170	6,000	6,052	7,305	8,919	10,802	13,297	13,096	14,955	16,056
Industrial	23,020	24,089	25,548	28,559	29,410	33,030	36,409	37,498	40,265	42,409
Water Supply	380	414	434	584	609	688	860	834	1,141	1,272
Irrigation	6,450	13,183	18,614	22,335	32,089	42,494	53,165	51,520	71,845	76,275
Street Light	1,550	1,608	1,961	2,339	2,214	2,374	2,590	2,878	2,774	2,810
Temporary Supply	165	210	300	403	522	634	619	768	726	749
Transport	54	39	38	42	41	42	44	51	43	46
Temple	2,290	2,628	2,746	2,911	2,941	3,181	3,529	3,857	4,048	4,243
Community Sales	58	169	375	594	795	995	1,161	1,207	1,377	1,476
Total (Internal Sales)	1,277,442	1,397,808	1,516,878	1,670,605	1,864,063	2,056,290	2,324,409	2,599,152	2,712,055	2,868,010
Bulk Supply (India)	5	5	5	5	4	2	5	4	2	2
Grand Total	1,277,447	1,397,813	1,516,883	1,670,610	1,864,067	2,056,292	2,324,414	2,599,156	2,712,057	2,868,012

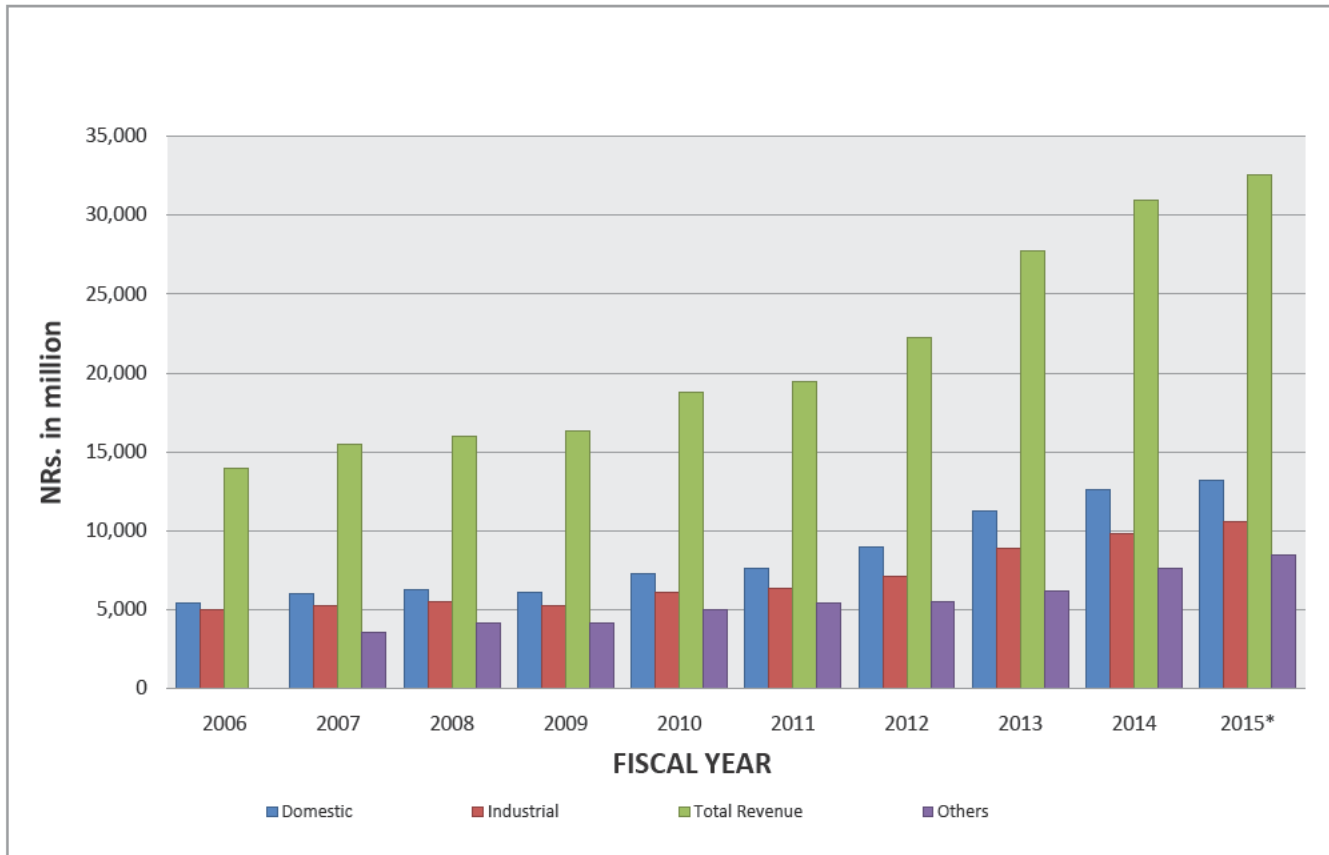
Note:- *Provisional figures

Electricity Sales



	(in GWh)									
Particulars	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Domestic	805.72	893.27	931.35	908.67	1,108.87	1,169.31	1,342.67	1,401.64	1,571.39	1,676.38
Non-Commercial	95.29	100.52	109.93	98.89	103.47	109.49	115.68	115.21	126.64	130.59
Commercial	120.30	141.69	154.38	146.29	187.12	204.03	240.74	256.82	285.42	302.10
Industrial	785.55	849.13	901.09	845.68	960.43	1,001.73	1,123.94	1,141.07	1,251.69	1,359.34
Water Supply & Irrigation	45.50	47.96	46.86	48.14	55.98	82.80	64.59	72.55	82.52	84.26
Street Light	63.24	66.90	70.26	67.51	65.58	67.21	72.06	76.24	76.44	78.06
Temporary Supply	0.87	1.26	0.70	1.04	1.00	1.00	1.20	1.47	1.34	1.51
Transport	5.65	6.31	5.88	5.22	5.42	5.54	6.72	6.26	6.22	6.55
Temple	4.77	4.78	5.12	4.76	3.64	3.46	3.95	4.11	5.18	4.90
Community Sales	9.18	15.51	24.65	32.01	34.95	51.95	69.02	77.04	86.08	96.85
Total (Internal Sales)	1,936.07	2,127.33	2,250.22	2,158.21	2,526.46	2,696.52	3,040.57	3,152.41	3,492.91	3,740.54
Bulk Supply (India)	96.55	76.87	60.10	46.38	75.07	31.10	4.12	3.60	3.40	3.21
Grand Total	2,032.62	2,204.20	2,310.32	2,204.59	2,601.53	2,727.62	3,044.69	3,156.01	3,496.31	3,743.75

Revenue

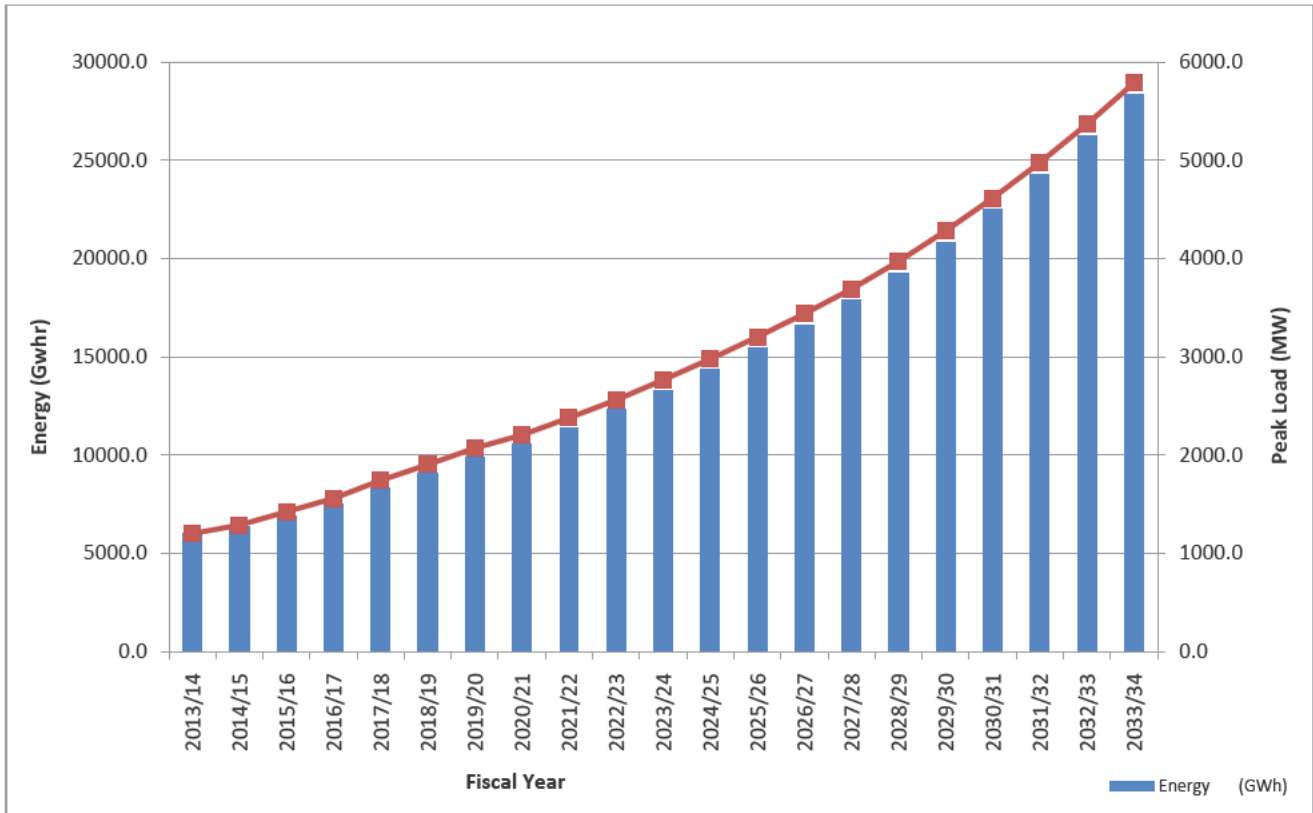


(NRs. in million)

Particulars	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015*
Domestic	5,405.12	6,021.40	6,297.65	6,100.65	7,252.06	7,602.34	8,967.77	11,247.77	12,622.11	13,226.66
Non-Commercial	881.73	940.20	982.08	900.75	983.63	1,020.51	1,091.52	1,355.17	1,486.63	1,542.30
Commercial	1,081.26	1,288.05	1,399.51	1,384.67	1,719.35	1,910.28	2,259.50	2,994.00	3,359.69	3,579.93
Industrial	4,978.69	5,300.91	5,544.80	5,264.33	6,060.20	6,378.25	7,102.37	8,885.21	9,844.18	10,575.66
Water Supply & Irrigation	197.96	214.18	204.67	215.62	353.14	250.60	294.82	389.34	418.20	447.68
Street Light	422.35	454.85	467.31	445.96	333.90	433.42	464.22	582.69	601.84	609.65
Temporary Supply	11.18	17.36	10.51	12.20	13.58	13.98	16.18	24.48	23.07	26.01
Transport	29.78	31.65	33.70	26.95	27.58	27.78	31.70	39.53	39.32	41.67
Temple	24.42	26.03	26.38	24.41	28.16	26.51	21.38	23.66	26.34	27.64
Community Sales	23.94	53.70	64.22	70.10	170.90	189.28	244.97	301.38	334.94	380.62
Total (Internal Sales)	13,056.43	14,348.33	15,030.83	14,445.64	16,942.50	17,852.95	20,494.43	25,843.23	28,756.31	30,457.82
Bulk Supply (India)	579.33	428.93	361.14	295.49	604.85	215.42	23.97	32.22	30.90	25.64
Gross Revenue	13,635.76	14,777.26	15,391.97	14,741.13	17,547.35	18,068.37	20,518.40	25,875.45	28,787.21	30,483.46
Net Income from Other Services	336.09	689.08	584.18	1,601.66	1,188.27	1,382.94	1,695.42	1,868.37	2,156.90	2,085.41
Total Revenue	13,971.85	15,466.34	15,976.15	16,342.79	18,735.62	19,451.31	22,213.82	27,743.82	30,944.11	32,568.87

Note:- *Provisional figures

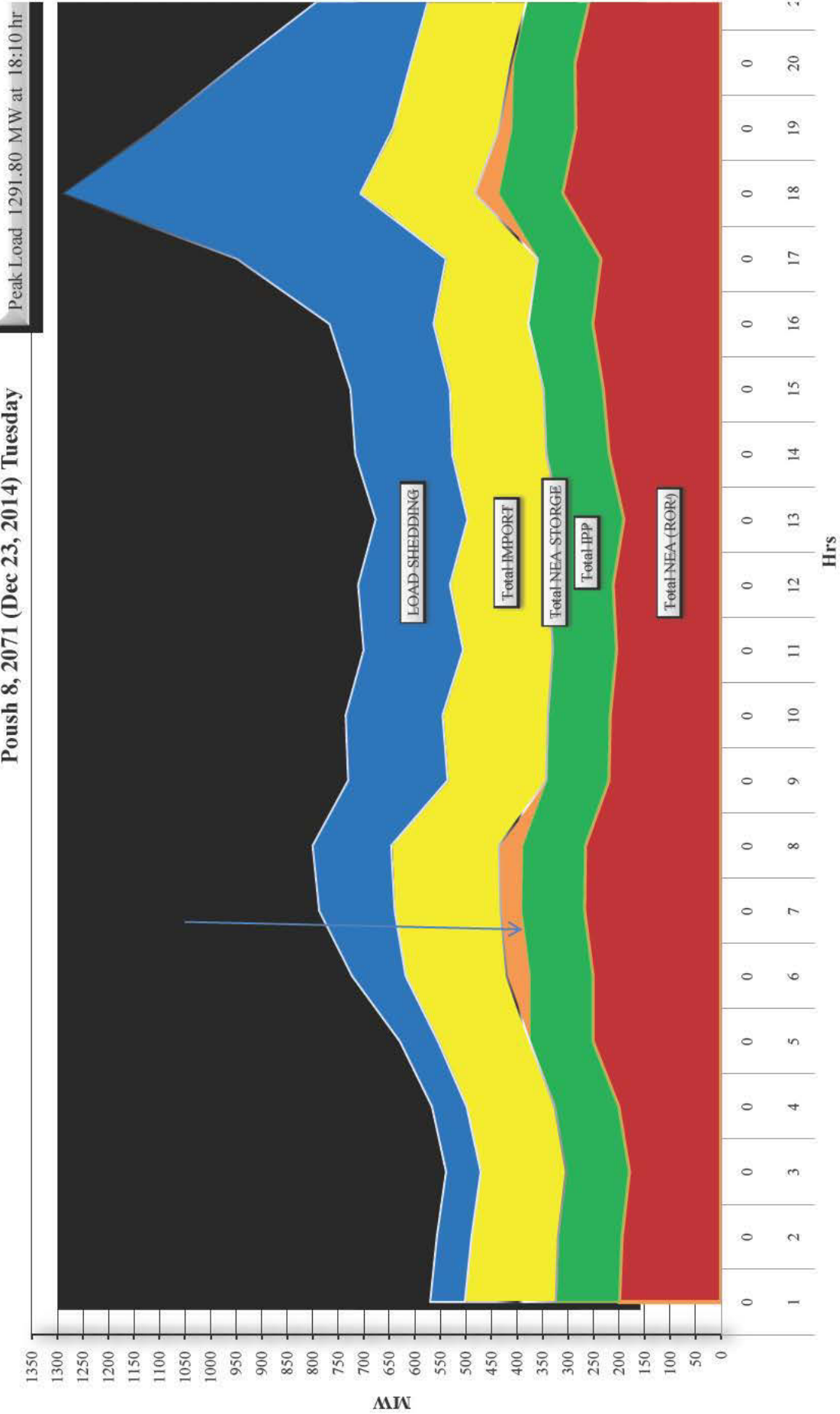
Load Forecast



Fiscal Years	Energy (GWh)	Peak Load (MW)
2013/14	5989.0	1201.0
2014/15	6334.7	1286.1
2015/16	6920.4	1422.8
2016/17	7491.1	1559.7
2017/18	8287.0	1742.2
2018/19	9070.2	1903.3
2019/20	9889.9	2071.5
2020/21	10540.6	2203.8
2021/22	11398.9	2378.9
2022/23	12299.4	2562.1
2023/24	13295.1	2764.5
2024/25	14349.2	2978.3
2025/26	15460.0	3203.0
2026/27	16631.6	3439.5
2027/28	17869.0	3688.7
2028/29	19275.0	3971.7
2029/30	20811.8	4280.7
2030/31	22474.7	4614.4
2031/32	24274.3	4974.9
2032/33	26221.9	5364.5
2033/34	28329.9	5785.3

System Load Curve of Peak Load Day

Load Dispatch Center
System Load Curve
Poush 8, 2071 (Dec 23, 2014) Tuesday



Electricity Generation Power Plants and Projects

Major Hydropower Stations		
S. No.	Power Plants	Capacity (kW)
1	Kaligandaki A	144,000
2	Middle Marsyangdi	70,000
3	Marsyangdi	69,000
4	Trisuli	24,000
5	Sunkoshi	10,050
6	Gandaki	15,000
7	Kulekhani I	60,000
8	Devighat	14,100
9	Kulekhani II	32,000
10	Puwa Khola	6,200
11	Modi Khola	14,800
	Sub Total	459,150
Small Hydropower Plants		
12	Sundarjal	640
13	Panauti	2,400
14	Fewa	1,000
15	Seti (Pokhara)	1,500
16	Tatopani	2,000
17	Chatara	3,200
18	Tinau	1,024
19	Pharphing***	500
20	Jomsom**	240
21	Baglung***	200
22	Khandbari**	250
23	Phidim**	240
24	Surnaiyagad	200
25	Doti***	200
26	Ramechhap	150
27	Terhathum**	100
28	Gamgad	400
	Sub Total	14,244
	Total	473,394

Small Hydropower Plants (Isolated)	
Dhankuta***	240
Jhupra (Surkhet)***	345
Gorkhe (Ilam)***	64
Jumla**	200
Dhading***	32
Syangja***	80
Helambu	50
Darchula**	300
Chame**	45
Taplejung**	125
Manag**	80
Chaurjhari(Rukum)**	150
Syapрудaha (Rukum)**	200
Bhojpur**	250
Bajura**	200
Bajhang**	200
Arughat (Gorkha)	150
Okhaldhunga	125
Rupalgad (Dadeldhura)	100
Achham	400
Dolpa	200
Kalokot	500
Heldung (Humla)	500
Total	4,536

S. No.	Thermal Power Plants	Capacity (KW)
1	Duhabi Mu tiful	39,000
2	Hetauda Diesel	14,410
	Total	53,410
Solar Power Plants		
1	Simikot	50
2	Gamgadhi	50
	Total	100
Total Major Hydro (NEA) - Grid Connected		473,394
Total Small Hydro (NEA)- Isolated		4,536
Total Hydro (NEA)		477,930
Total Hydro (IPP)		255,647
Total Hydro (Nepal)		733,577
Total Thermal (NEA)		53,410
Total Solar (NEA)		100

Total Installed Capacity (NEA and IPP) 787,087

Total Installed Capacity (NEA & IPP)-Grid 782,451

Under Construction		Capacity (KW)
1	Upper Tamakosi Hydropower Project	456,000
2	Tanahu Hydropower Project	140,000
3	Chameliya HEP	30,000
4	Kulekhani III	14,000
5	Upper Trisuli 3 A HEP	60,000
6	Rahughat HEP	32,000
7.	Upper Sanjen	14,600
8.	Sanjen	42,500
9.	Rasuwagadi	111,000
10	Madhya Bhotekoshi	102,000
11	Upper Trisuli 3 B	42,000
	Total	1,044,100

Planned and Proposed		Capacity (KW)
1	Upper Arun HEP	335,000
2	Upper Modi A HEP	42,000
3	Upper Modi HEP	18,200
4	Dudh Kosi Storage HEP	640,000
5	Tamor Storage HEP	530,000
6	Uttar Ganga Storage HEP	300,000
7	Tamakoshi V HEP	87,000
8	Upper Bheri HEP	85,000
9.	Chainpur Seti HEP	140,000
	Total	2177200

Note

** Leased to Private Sector

*** Not in Normal Operation

High Voltage Transmission Lines & Substations

High Voltage Transmission Lines & Substations

EXISTING		Type of Ckts		Length		Conductor		Conductor		Type of Ckts		Length		Conductor	
132 kV Transmission Line		Circuit Km		Type (Sq.in.)		Type		Type		Circuit Km		Type		Type	
1	Anarmani-Duhabi	75.76	Single	0.25	BEAR	57	Double	BEAR	0.25	BEAR	1.010.0	BEAR	0.25	BEAR	0.25
2	Kusha-Kalya(India)	15	Single	0.25	BEAR	118	Single	BEAR	0.25	BEAR	18	BEAR	0.25	BEAR	0.25
3	Duhabi-Lahan-Cha-pur-Pathalya/Parwanipur-Hetauda	598	Double	0.25	BEAR	208	Double	BEAR	0.25	BEAR	208	BEAR	0.25	BEAR	0.25
4	Hetauda-KL2 P/S	8	Single	0.25	BEAR	76	Double	BEAR	0.25	BEAR	76	BEAR	0.25	BEAR	0.25
5	Bharatpur-Marsyangdi P/S	25	Single	0.3	DUCK	180	Double	DUCK	0.3	DUCK	180	BEAR	0.25	BEAR	0.25
6	Hetauda-Bharatpur	70	Single	0.2	PANTHER	76	Double	PANTHER	0.2	PANTHER	76	BEAR	0.25	BEAR	0.25
7	Marsyangdi P/S-Suachatar	84	Single	0.3	DUCK	22	Single	DUCK	0.3	DUCK	22	BEAR	0.25	BEAR	0.25
8	Suachatar-KL 2 P/S	36	Single	0.25	BEAR	45	Double	BEAR	0.25	BEAR	45	BEAR	0.25	BEAR	0.25
9	Suachatar-Balaju-New Bhaktapur	26.9	Single	0.25	BEAR	180	Double	BEAR	0.25	BEAR	180	BEAR	0.25	BEAR	0.25
10	New Bhaktapur-Lamosangu	96	Double	0.25	BEAR	48	Double	BEAR	0.25	BEAR	48	CARDINAL	0.25	BEAR	0.25
11	Lamosangu-Khimti P/S	46	Single	0.25	BEAR	48	Double	BEAR	0.25	BEAR	48	ASSR	0.25	BEAR	0.25
12	Lamosangu-Bhotekoshi P/S	31	Single	0.25	BEAR	150	Double	BEAR	0.25	BEAR	150	BISON	0.25	BEAR	0.25
13	Bharatpur-Damauli	39	Single	0.15	WOLF	73	Double	WOLF	0.15	WOLF	73	BISON	0.25	BEAR	0.25
14	Bharatpur-Kawasoti-Bardghat	70	Single	0.2	PANTHER	150	Double	PANTHER	0.2	PANTHER	150	BISON	0.25	BEAR	0.25
15	Bardghat-Gandak P/S	86	Double	0.2	BEAR	286	Double	BEAR	0.2	BEAR	286	MOOSE	0.25	BEAR	0.25
16	Bardghat-Butwal	86	Double	0.25	BEAR	659	Double	BEAR	0.25	BEAR	659	MOOSE	0.25	BEAR	0.25
17	Butwal-KGA P/S	116	Double	0.3	DUCK	570	Double	DUCK	0.3	DUCK	570	MOOSE	0.25	BEAR	0.25
18	KGA P/S-Lekhnath	95	Double	0.3	DUCK	78	Double	DUCK	0.3	DUCK	78	MOOSE	0.25	BEAR	0.25
19	Lekhnath-Damauli	46	Single	0.15	PANTHER	648	Double	PANTHER	0.15	PANTHER	648	MOOSE	0.25	BEAR	0.25
20	Lekhnath-Pokhara	7	Single	0.1	DOG	219.8	Double	DOG	0.1	DOG	219.8	MOOSE	0.25	BEAR	0.25
21	Pokhara-Modikhola P/S	37	Single	0.25	BEAR	80	Double	BEAR	0.25	BEAR	80	MOOSE	0.25	BEAR	0.25
22	Butwal-Shivapur-Lamahi	230	Double	0.25	BEAR	170	Double	BEAR	0.25	BEAR	170	MOOSE	0.25	BEAR	0.25
23	Lamahi-Jhimruk P/S	50	Double	0.1	DOG	50	Double	DOG	0.1	DOG	50	MOOSE	0.25	BEAR	0.25
24	Lamahi-Kohalpur-Lumki-Atariya	333	Partly Double	0.25	BEAR	180	Double	BEAR	0.25	BEAR	180	MOOSE	0.25	BEAR	0.25
25	Atariya-Mahendranagar-Gaddachauki	49	Single	0.25	BEAR	80	Double	BEAR	0.25	BEAR	80	BISON	0.25	BEAR	0.25
26	Marsyangdi-M. Marsyangdi	40	Single	420 sq.m	CARDINAL	170	Double	CARDINAL	420 sq.m	CARDINAL	170	MOOSE	0.25	BEAR	0.25
Total		2,397.7								949.80					
66 kV Transmission Line										1320.00					
1	Chilime P/S-Trishuli P/S	39	Single	0.15	BEAR	44	Double	BEAR	0.15	BEAR	44	BEAR	0.25	BEAR	0.25
2	Trishuli P/S-Balaju	58	Double	0.1	BEAR	40	Double	BEAR	0.1	BEAR	40	BEAR	0.25	BEAR	0.25
3	Trishuli P/S-Bardghat P/S	30	Single	0.15	BEAR	220	Double	BEAR	0.15	BEAR	220	BEAR	0.25	BEAR	0.25
4	Dewighat P/S-Balaju	45.6	Single	0.1	BEAR	60	Double	BEAR	0.1	BEAR	60	BEAR	0.25	BEAR	0.25
5	Dewighat P/S-New Chabel	33	Single	0.1	BEAR	32	Double	BEAR	0.1	BEAR	32	BEAR	0.25	BEAR	0.25
6	Balaju-Lanchor	72	Double	0.15	BEAR	84	Double	BEAR	0.15	BEAR	84	BEAR	0.25	BEAR	0.25
7	Balaju-Suachatar-KL1 P/S	144	Double	0.15	BEAR	100	Double	BEAR	0.15	BEAR	100	BEAR	0.25	BEAR	0.25
8	KL 1 P/S-Hetauda-Biguni	144	Double	0.15	BEAR	120	Double	BEAR	0.15	BEAR	120	BEAR	0.25	BEAR	0.25
9	Suachatar-Teku	4.1	Single	0.25	BEAR	260	Double	BEAR	0.25	BEAR	260	BEAR	0.25	BEAR	0.25
10	Suachatar-New Patan	13	Double	0.15	BEAR	36	Double	BEAR	0.15	BEAR	36	BEAR	0.25	BEAR	0.25
11	Teku-K3 (underground)	2.8	Singlecore	400 sq.m	XLPE Cable	214	Double	XLPE Cable	400 sq.m	XLPE Cable	214	BEAR	0.25	BEAR	0.25
12	New Patan-New Baneswor	6.9	Single	0.25+500 sq.m	XLPE Cable	86	Double	XLPE Cable	0.25+500 sq.m	XLPE Cable	86	BEAR	0.25	BEAR	0.25
13	Bhaktapur-New Chabel	2.8	Single	120 sq.m	XLPE Cable	24	Double	XLPE Cable	120 sq.m	XLPE Cable	24	BEAR	0.25	BEAR	0.25
14	Bhaktapur-Banepa	23	Single	250 & 100 sq.m	XLPE Cable	21	Double	XLPE Cable	250 & 100 sq.m	XLPE Cable	21	BEAR	0.25	BEAR	0.25
15	Bhaktapur-Banepa-Panchkhal-Sunkoshi P/S	48	Single	120 sq.m	XLPE Cable	86	Double	XLPE Cable	120 sq.m	XLPE Cable	86	BEAR	0.25	BEAR	0.25
16	Indrawati-Panchkhal	28	Single	95 sq.m	XLPE Cable	24	Double	XLPE Cable	95 sq.m	XLPE Cable	24	XLPE	800 sq.m	BEAR	0.25
Total		511.16								1320.00					
EXISTING GRID SUBSTATIONS															
132 & 66KV SUBSTATIONS (CAPACITY IN MVA)															
1	Mahendranagar	12.5	30.0	85.0	1. Birgung	3.2	120.0	94.0	132/33/11 KV Ilam, Phidim, Kabei	94.0	120.0	132/33/11 KV Chhapali	120.0	132/33/11 KV Chhapali	120.0
2	Atariya	30.0	30.0	3.2	2. Amiekhung	36.0	63.0	63.0	132/33/33KV Rupani	63.0	63.0	132/33/33KV Rupani	63.0	132/33/33KV Rupani	63.0
3	Lumki	15.0	50.0	30.0	3. Simra	36.0	30.0	30.0	132/33/33KV Hapure	30.0	30.0	132/33/33KV Hapure	30.0	132/33/33KV Hapure	30.0
4	Kohalpur	45.0	18.0	45.0	4. K-3	7.5	30.0	30.0	132/33 KV New Marsyangdi	30.0	30.0	132/33 KV New Marsyangdi	30.0	132/33 KV New Marsyangdi	30.0
5	Lamahi + Kusum	67.5	126.0	54.0	5. Teku	22.5	30.0	30.0	132/33 KV Singat	30.0	30.0	132/33 KV Singat	30.0	132/33 KV Singat	30.0
6	Shivapur	35.0	90.0	36.0	6. Patan	45.0	60.0	60.0	132/33 KV Bhurigaon, Pahalmanpur	60.0	60.0	132/33 KV Bhurigaon, Pahalmanpur	60.0	132/33 KV Bhurigaon, Pahalmanpur	60.0
7	Butwal	126.0	60.0	36.0	7. Baneswor	45.0	30.0	30.0	132/33KV Mirchalya	30.0	30.0	132/33KV Mirchalya	30.0	132/33KV Mirchalya	30.0
8	Bardghat	13.5	12.5	7.5	8. Indrawati	67.5	67.5	67.5	132/33KV Ghorahi	67.5	67.5	132/33KV Ghorahi	67.5	132/33KV Ghorahi	67.5
9	Kawasoti	30.0	20.0	22.5	9. Banepa	10.0	113.4	113.4	132/33KV New Bharatpur	113.4	113.4	132/33KV New Bharatpur	113.4	132/33KV New Bharatpur	113.4
10	Bharatpur	67.5	30.0	10.0	10. Panchkhal	45.0	52.5	52.5	Total	506.5	506.5	Total	506.5	Total	506.5
11	Hetauda	110.0	45.0	45.0	11. Lanchour	45.0	52.5	52.5							
12	Parwanipur	171.0	45.0	67.5	12. New-Chabel	67.5	67.5	67.5							
13	Chandranigahapur	60.0	113.4	67.5	13. Balaju	67.5	67.5	67.5							
14	Pathalya	22.5	28.0	52.5	13. Balaju	67.5	67.5	67.5							
Total		1,622.40		509.15		509.15		509.15		506.5		506.5		506.5	
PLANNED & PROPOSED															
220 KV Transmission Line															
1	Hetauda-Dhalkebar-Duhabi	570	Double	MOOSE	MOOSE	570	Double	MOOSE	MOOSE	MOOSE	570	MOOSE	MOOSE	MOOSE	MOOSE
2	400 KV Dhalkebar-Muzaffarpur Cross Border Line (Nepal Portion)	78	Double	MOOSE	MOOSE	78	Double	MOOSE	MOOSE	MOOSE	78	MOOSE	MOOSE	MOOSE	MOOSE
Total		648								648					
4000 KV Transmission Line															
1	Hetauda-Dhalkebar-Duhabi	570	Double	MOOSE	MOOSE	570	Double	MOOSE	MOOSE	MOOSE	570	MOOSE	MOOSE	MOOSE	MOOSE
2	400 KV Dhalkebar-Muzaffarpur Cross Border Line (Nepal Portion)	78	Double	MOOSE	MOOSE	78	Double	MOOSE	MOOSE	MOOSE	78	MOOSE	MOOSE	MOOSE	MOOSE
Total		648								648					
PLANNED & PROPOSED															
220 KV Transmission Line															
1	Kaligandaki Corridor	219.8	Double	MOOSE	MOOSE	219.8	Double	MOOSE	MOOSE	MOOSE	219.8	MOOSE	MOOSE	MOOSE	MOOSE
2	Lekhnath-Damauli	80	Double	MOOSE	MOOSE	80	Double	MOOSE	MOOSE	MOOSE	80	MOOSE	MOOSE	MOOSE	MOOSE
3	Marsyangdi-Kathmandu	170	Double	MOOSE	MOOSE	170	Double	MOOSE	MOOSE	MOOSE	170	MOOSE	MOOSE	MOOSE	MOOSE
4	Marsyangdi-Bharatpur	50	Double	MOOSE	MOOSE	50	Double	MOOSE	MOOSE	MOOSE	50	MOOSE	MOOSE	MOOSE	MOOSE
5	Marsyangdi Transmission Corridor	180	Double	MOOSE	MOOSE	180	Double	MOOSE	MOOSE	MOOSE	180	MOOSE	MOOSE	MOOSE	MOOSE
6	Chilime-Trishuli	80	Double	MOOSE	MOOSE	80	Double	MOOSE	MOOSE	MOOSE	80	MOOSE	MOOSE	MOOSE	MOOSE
7	Tamarkoshi-Kathmandu 220/400KV	170	Double	MOOSE	MOOSE	170	Double	MOOSE	MOOSE	MOOSE	170	MOOSE	MOOSE	MOOSE	MOOSE
Total		949.80								949.80					
132 KV Transmission Line															
1	Buwai-Lumbini	44	Double	BEAR	BEAR	44	Double	BEAR	0.25	BEAR	44	BEAR	0.25	BEAR	0.25
2	Dhalkebar-Loharpati	40	Double	BEAR	BEAR	40	Double	BEAR	0.25	BEAR	40	BEAR	0.25	BEAR	0.25
3	Gulmi-Angrikhanandi-Gousinghe	220	Double	BEAR	BEAR	220</									

Power Purchase Agreement Concluded Projects (in Operation)

S.N.	Projects	Developers	Location	Capacity (kW)
1	Khimti Khola	Himal Power Ltd.	Dolkha	60000
2	Piluwa Khola	Arun Valley Hydro Power Company Ltd.	Sankhuwasava	3000
3	Pheme Khola	Khoranga Khola Hydro Power Co. Ltd.	Panchtar	995
4	Ridi Khola	Ridi Hydropower Development Co. (P.) Ltd.	Gulmi	2400
5	Mai Khola	Himal Dolkha Hydropower Company Ltd.	Ilam	4500
6	Lower Piluwa	Baneshor Hydropower Pvt. Ltd.	Sankhuwasabha	990
7	Hewa Khola	Barun Hydropower Development Co. (P.) Ltd.	Sankhuwasabha	4455
8	Siuri Khola	Nyadi Group (P.) Ltd.	Lamjung	4950
9	Sipring Khola	Synergy Power Development (P.) Ltd.	Dolkha	9658
10	Bhotekoshi Khola	Bhotekoshi Power Company Ltd.	Sindhupalchok	45000
11	Syange Khola	Syange Bidyut Company Limited	Lamjung	183
12	Indrawati - III	National Hydro Power Company Ltd.	Sindhupalchowk	7500
13	Chilime	Chilime Hydro Power Company Ltd.	Rasuwa	22000
14	Rairang Khola	Rairang Hydro Power Development Co. (P) Ltd.	Dhading	500
15	Sunkoshi Khola	Sanima Hydro Power Company Ltd.	Sindhupalchok	2500
16	Chaku Khola	Alliance Power Nepal Pvt.Ltd.	Sindhupalchok	3000
17	Khudi Khola	Khudi Hydro Power Ltd.	Lamjung	3450
18	Baramchi Khola	Unique Hydrel Co. Pvt.Ltd.	Sindhupalchowk	4200
19	Sisne Khola	Gautam Buddha Hydropower (Pvt) Ltd	Palpa	750
20	Thoppal Khola	Thoppal Khola Hydro Power Co. Pvt. Ltd.	Dhading	1650
21	Sali Nadi	Kathmandu Small Hydropower Systems Pvt. Ltd.	Kathmandu	250
22	Pati Khola	Unified Hydropower (P) Ltd.	Parbat	996
23	Seti-II	Task Hydropower Company (P.) Ltd.	Kaski	979
24	Upper Hadi Khola	Centre for Power Dev. And Services (P.) Ltd.	Sindhupalchowk	991
25	Mardi Khola	Gandaki Hydro Power Co. Pvt. Ltd.	Kaski	4800
26	Bijayapur-1	Bhagawati Hydropower Development Co. (P.) Ltd.	Kaski	4410
27	Solar	Kathmandu Upatyaka Khanepani Board	Kathmandu, Lalitpur	680.4
28	Lower Modi I	United Modi Hydropower Pvt. Ltd.	Parbat	10000
29	Middle Chaku	Laughing Buddha Power Nepal (P.) Ltd.	Sindhupalchowk	1800
30	Tadi Khola (Thaprek)	Aadishakti Power Dev. Company (P.) Ltd.	Nuwakot	5000
31	Charanawati Khola	Nepal Hydro Developer Pvt..Ltd	Dolakha	3520
32	Lower Chaku Khola	Laughing Buddha Power Nepal (P.) Ltd.	Sindhupalchowk	1800
33	Ankhu Khola - 1	Ankhu Khola Jal Bidhyut Co. (P.) Ltd.	Sindhupalchok	8400
34	Bhairab Kunda	Bhairabkunda Hydropower Pvt. Ltd.	Sindhupalchowk	3000
35	Radhi Khola	Radhi Bidyut Company Ltd.	Lamjung	4400
36	Chhote Khola	Pashupati Environmental Eng. Power Co. Pvt. Ltd.	Gorkha	993
37	Mailung Khola	Mailung Khola Hydro Power Company (P.) Ltd.	Rasuwa	5000
38	Upper Puwa -1 Hydropower Project	Joshi Hydropower Development Company Pvt. Ltd.	Puwa Mahjuwa,Ilam	3000
39	Jiri Khola	Bojini Company Private Limited	Dolkha	2200
40	Mai Khola	Sanima Hydro Power P.Ltd.	Ilam	22000
41	Upper Hugdi Khola	Ruru Jalbidhyut Pariyojana Pvt. Ltd.	Gulmi	5000
42	Andhi Khola	Butwal Power Company Ltd.	Syangza	9400
43	Belkhu	Prime Hydropower Co. Pvt. Ltd.	Dhading	518
44	Jhimruk Khola	Butwal Power Company Ltd.	Pyuthan	12000
			TOTAL	292818.4

Power Purchase Agreement Concluded Projects (under Construction)

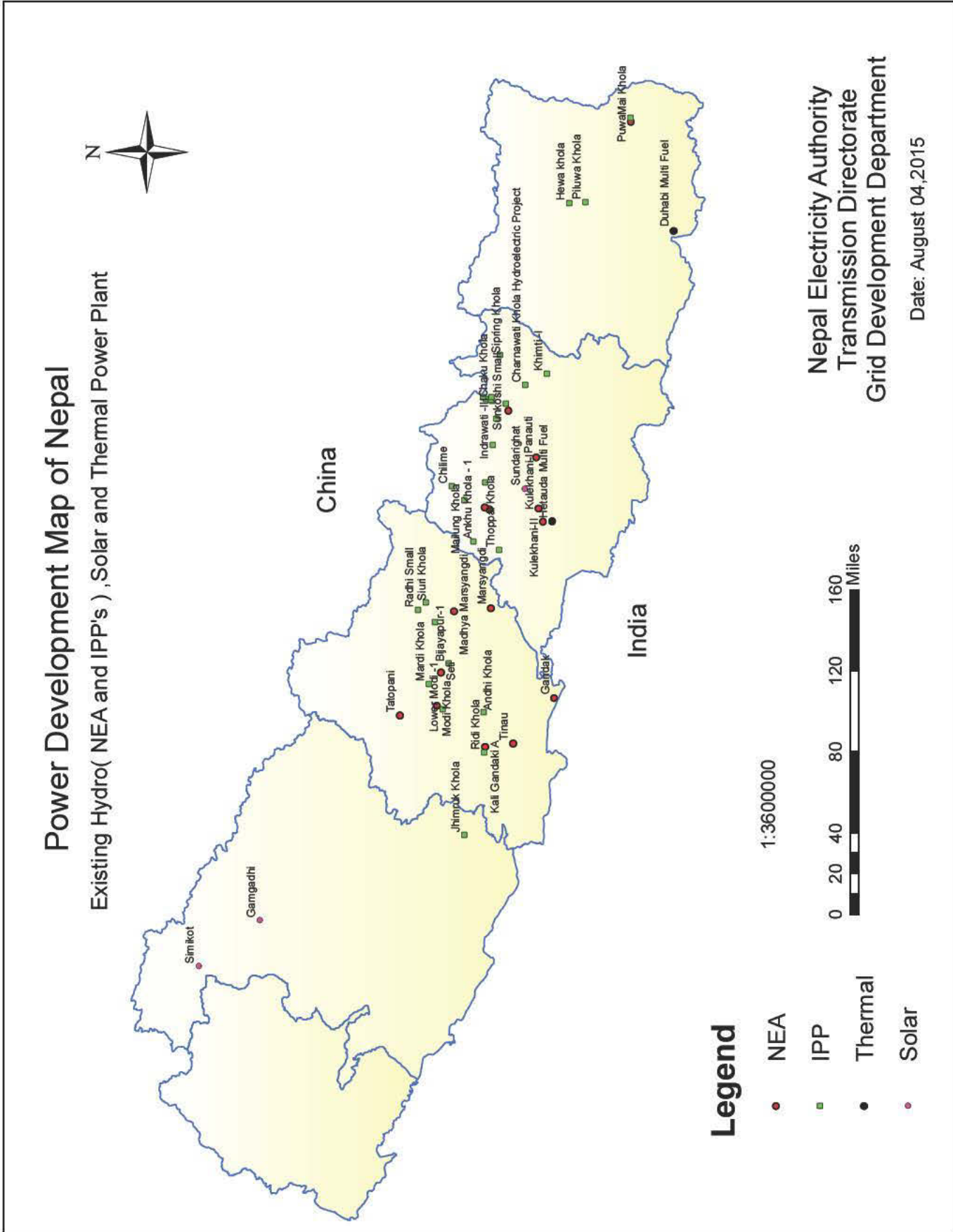
SN	Developers	Projects	Location (District)	Capacity (kW)
1	Sunkoshi Hydro Power Co. Pvt. Ltd.	Lower Indrawati Khola	Sindhupalchok	4,500
2	Mai Valley Hydropower Privated Limited	Upper Mai Khola	Ilam	9,980
3	Shivani Hydropower Company (P.) Ltd.	Phawa Khola	Taplejung	4,950
4	Nama Buddha Hydropower (P) Ltd	Tinau Khola	Palpa	990
5	Garjang Upatyaka Hydropower (P.) Ltd.	Chake Khola	Ramechhap	2,830
6	Madi Power Pvt. Ltd.	Upper Madi	Kaski	19,008
7	Eastern Hydropower (P.) Ltd.	Pikhuwa Khola	Bhojpur	2,475
8	Sikles Hydropower (P) Ltd.	Madkyu Khola	Kaski	9,968
9	Jumdi Hydropower Pvt.Ltd.	Jumdi Khola	Gulmi	1,750
10	Barahi Hydropower Pvt.ltd	Theule Khola	Baglung	1,500
11	Hira Ratna Hydropower P.ltd	Tadi Khola	Nuwakot	5,000
12	Api Power Company Pvt.Ltd	NauGad Gad Khola	Baitadi	8,500
13	Electro-com and Research Centre Pvt.Ltd	Jhyadi Khola	Sindhupalchowk	2,000
14	Energy Engineering Pvt.ltd	Upper Mailun A	Rasuwa	5,000
15	Teleye Samyak Company Pvt.Ltd	Dhansi Khola	Rolpa	955
16	Shiva Shree Hydropower Pvt.Ltd	Upper Chaku A	Sindhupalchowk	22,200
17	Greenlife Energy Pvt.Ltd	Khani khola-1	Dolakha	25,000
18	Upper Tamakoshi Hydropower Co. Ltd.	Upper Tamakoshi HPP	Dolkha	456,000
19	Sinohydro-Sagarmatha Power Company (P.) Ltd	Upper Marsyangdi A	Lamjung	50,000
20	Shree Himalayan Urja Bikas Co. Pvt. Ltd.	Upper Khimti	Dolkha	12,000
21	Mount Kailash Energy Pvt. Ltd.	Thapa Khola	Myagdi	11,200
22	Green Venture Pvt.Ltd.	Likhu-IV	Okhaldhunga	52,400
23	Robust Energy Pvt. Ltd.	Mistri Khola	Myagdi	42,000
24	Daraudi Kalika Hydro Pvt. Ltd.	Daraudi Khola A	Gorkha	6,000
25	Manang Trade Link Pvt. Ltd.	Lower Modi	Parbat	20,000
26	Pachathar Power Company Pvt. Ltd.	Hewa Khola A	Pachathar	14,900
27	Sanjen Hydropower Co.Limited	Upper Sanjen	Rasuwa	14,800
28	Middle Bhotekoshi Jalbidhyut Company	Middle Bhotekoshi	Sindhupalchowk	102,000
29	Chilime Hydro Power Company Ltd.	RasuwaGadi	Rasuwa	111,000

30	Water and Energy Co.Pvt.Ltd	Badi Gad	Baglung	6,600
31	Sanjen Hydropower Co.Limited	Sanjen	Rasuwa	42,500
32	Gelun Hydropower Co.Pvt.Ltd	Gelun	Sindhupalchowk	3,200
33	Dronanchal Hydropower Co.Pvt.Ltd	Dhunge-Jiri	Dolakha	600
34	Mandakani Hydropower Privated Limited	Sardi Khola	Kaski	4,000
35	Dibeshwori Hydropower Company Limited	Saba Khola	Sankhubasha	4,000
36	Dariyal Small Hydropower Pvt.Ltd	Upper Belkhu	Dhading	996
37	Sayapatri Hydropower Privated Limited	Daram Khola A	Baglung	2,500
38	Mai Valley Hydropower Privated Limited	Upper Mai C	Ilam	5,100
39	Chyangdi Hydropower Privated Limited	Chhandi	Lamjung	1,700
40	Himalayan Power Partner Pvt. Ltd.	Dordi Khola	Lamjung	27,000
41	Sasa Engineering Hydropower (P). Ltd	Khani Khola(Dolakha)	Dolakha	30,000
42	Arun Kabeli Power Ltd.	Kabeli B-1	Taplejung, Panchthar	25,000
43	Rising Hydropower Compnay Ltd.	Selang Khola	Sindhupalchowk	990
44	Khani Khola Hydropower Co. Ltd.	Tungun-Thosne	Lalitpur	4,360
45	Khani Khola Hydropower Co. Ltd.	Khani Khola	Lalitpur	2,000
46	Kutheli Bukhari Small Hydropower (P).Ltd	Suspa Bukhari	Dolakha	998
47	Liberty Hydropower Pvt. Ltd.	Upper Dordi A	Lamjung	22,000
48	Hydro Innovation Pvt. Ltd.	Tinekhu Khola	Dolakha	990
49	Salankhu Khola Hydropower Pvt. Ltd.	Salankhu Khola	Nuwakot	2,500
50	Moonlight Hydropower Pvt. Ltd.	Balefi A	Sindhupalchowk	10,600
51	Sanvi Energy pvt. Ltd.	Jogmai	Ilam	7,600
52	Sapsu Kalika Hydropower Co. Pvt. Ltd.	Miya Khola	Khotang	996
53	Middle Modi Hydropower Ltd.	Madhya Modi	Parbat	15,100
54	Reliable Hydropower Co. Pvt. Ltd.	Khorunga Khola	Terhathum	4,800
55	Rara Hydropower Co. Pvt. Ltd.	Upper Parajuli Khola	Dailekha	2,150
56	Lohore Hydropower Co. Pvt. Ltd.	Lohore Khola	Dailekha	4,200
57	Dudhkoshi Power Company Pvt. Ltd.	Rawa Khola	Khotang	6,500
58	Mandu Hydropower Company Pvt.Ltd	Bagmati Khola	Makabanpur	20,000
59	Sanima Mai Hydropower Ltd.	Mai Cascade	Ilam	7,000
60	Universal Power Company (P) Ltd.	Lower Khare	Dolakha	8,260
61	Madhya Midim Jalbidhyut Company P. Ltd.	Middle Midim	Lamjung	3,100

62	Volcano Hydropower Pvt. Ltd.	Teliya Khola	Dhankuta	996
63	Bidhyabasini Hydropower Dev. Co. Pvt.Ltd.	Rudi A	Lamjung, Kaski	6,800
64	Union Hydropower Pvt Ltd.	Midim Karapu	Lamjung	3,000
65	Himal Dolkha Hydropower Company Ltd.	Mai sana Cascade	Ilam	8,000
66	Molung Hydropower Co. Pvt. Ltd.	Molung Khola	Okhaldhunga	7,000
67	Betrawoti Hydropower Company (P).Ltd	Phalankhu Khola	Rasuwa	13,700
68	Himalaya Urja Bikash Company (P).Ltd	Upper Khimti II	Ramechhap	7,000
69	Salmendevi Hydropower (P).Ltd	Kapadigad	Doti	3,330
70	Dovan Hydropower Company (P).Ltd	Junbesi Khola	Solukhumbu	5,200
71	Bhugol Energy Dev Compay (P). Ltd	Dwari Khola	Dailekha	3,750
72	Cemat Power Dev Company (P).Ltd	Ghalendi Khola	Myagdi	4,000
73	Rairang Hydro Power Dev. Co. (P) Ltd.	Iwa Khola	Taplejung	9,900
74	Tangchhara Hydro Pvt. Ltd.	Tangchhahara	Mustang	2,200
75	Deurali Bahuudesiya Sahakari Sanstha Ltd.	Midim Khola	Lamjung	100
76	Abiral Hydropower Co. Pvt. Ltd.	Upper Khadam	Morang	990
77	Essel Clean Solu Hydropower (P).Ltd	Lower Solu	Solukhumbu	82,000
78	Conrorium Power Developer (P) Ltd	Khare Khola	Dolakha	24,100
79	Upper Solu Hydroelectric Company (P).Ltd	Solu Khola	Solukhumbu	23,500
80	Idi Hydropower Co. P.ltd.	Idi Khola	Kaski	975
81	Puwa 1 Hydropower P.Ltd.	Puwa Khola -1	Ilam	4,000
82	Buddhabhumi Nepal Hydropower Co. Pvt. Ltd.	TalloTadi Khola	Nuwakot	4,993
83	River Falls Hydropower Dev. Pvt.Ltd	Down Piluwa	Sankhuwasabha	9500
			Total	1,521,280

Power Purchase Agreement Concluded Projects (in Different Stages of Development)

S.N.	Delvelopers	Projects	Location (District)	Capacity (kW)
1	TMB Energietechnik	Narayani Shankar Biomass	Rupandehi	600
2	Himalayan Hydropower Pvt. Ltd.	Namarjun Madi	Kaski	11,880
3	Balefi Jalbidhyut Com. Pvt. Ltd	Balefi	Sindhupalchowk	24,000
4	Ingua Hydropower Company Pvt.Ltd	Upper Ingua Khola	Ilam	9,700
5	Molnia Power Ltd.	Upper Mailung	Rasuwa	14,300
6	Jywala Sajhedari Hydropower Company Pvt. Ltd.	Tame Khola	Dailekha	1,250
7	Suryakunda Hydroelectric Pvt. Ltd.	Upper Tadi	Nuwakot	11,000
8	Tallo Midim Jalbidhut Company (P) Ltd.	Lower Midim	Lamjung	996
9	Manakamana Engineering HP. Co. Pvt. L.	Ghatte Khola	Dolakha	5,000
10	Singati Hydro Energy (P) Ltd	Singati Khola	Dolakha	16,000
11	Maya Khola HP Co. P. Ltd.	Maya Khola	Sankhuwa Sabha	14,900
12	Mountain Hydro Nepal Pvt.Ltd.	Tallo Hewa Khola	Panchthar	21600
13	Bidhyabasini Hydropower Dev. Co. Pvt.Ltd.	Rudi Khola B	Lamjung	6600
14	Ludi Hydropower Development Co. Pvt.Ltd	Ludi Khola	Gorkha	750
15	Asmita Hydropower Company Pvt.Ltd.	Sunkoshi	Ramechhap	400
16	Shakti Urja Bikash Company Pvt. Ltd.	Tauthali	Sindhupalchowk	950
17	Dordi Khola Hydropower Company Limited	Dordi-1	Lamjung	10,300
18	Rasuwa Hydropower Pvt.Ltd	Falankhu Khola	Rasuwa	5000
19	Rangun Khola Hydropower Pvt.Ltd.	Jeuli Gad	Bhajang	996
20	Hydro Venture Pvt.Ltd.	Solu Khola (Dudhkoshi)	Solukhumbhu	86000
21	Peoples Hydropower Company Pvt.Ltd.	Super Dordi	Lamjung	49600
22	Global Hydropower Associate	Likhu 2	Ram/Solu	33400
23	Pan Himalayan Energy Pvt. Ltd.	Likhu 1	Ram/Solu	51400
24	Numbur Himalaya Hydropower Pvt. Ltd.	Likhu A	Solukhumbu/Ramechhap	24200
25	Deepsabha Hydropower Pvt. Ltd.	Sabha Khola A	Sankhuwasabha	8300
26	Research and Development Group Pvt. Ltd.	Rupse Khola	Myagdi	4000
27	Hydro Empire Pvt. Ltd.	Upper Myagdi	Myagdi	20000
28	Chandeshwori Mahadev Khola MH. Co. Pvt. Ltd.	Chulepu Khola	Ramechhap	8520
29	Nyadi Hydropower Limited	Nyadi	Lamjung	30000
30	Suri Khola Hydropower Pvt. Ltd.	Suri Khola	Dolakha	6400
31	Sanigad Hydro Pvt. Ltd.	Upper Sanigad	Bajhang	10700
32	Kalanga Hydro Pvt. Ltd.	Kalangagad	Bajhang	15330
33	Sanigad Hydro Pvt. Ltd.	Upper Kalangagad	Bajhang	38460
			Total	542,532

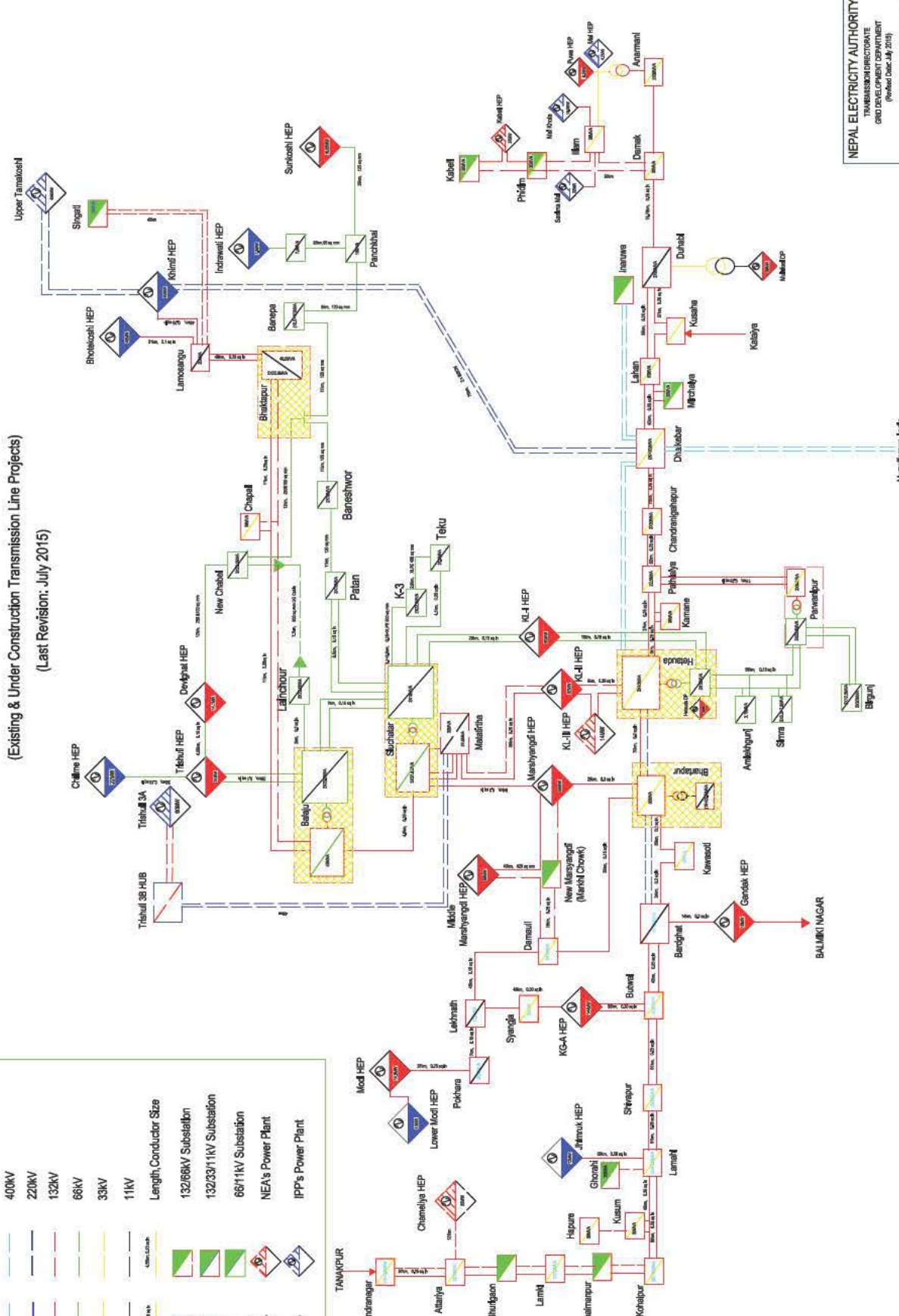


INTEGRATED NEPAL POWER SYSTEM

(Existing & Under Construction Transmission Line Projects)
(Last Revision: July 2015)

Legend:

Existing		Under Construction	
	400KV		400KV
	220KV		220KV
	132KV		132KV
	66KV		66KV
	33KV		33KV
	11KV		11KV
	132/66KV Substation		132/66KV Substation
	132/33/11KV Substation		132/33/11KV Substation
	NEA's Power Plant		NEA's Power Plant
	IPP's Power Plant		IPP's Power Plant



NEPAL ELECTRICITY AUTHORITY
TRANSMISSION/DIRECTIONAL
GRID DEVELOPMENT DEPARTMENT
(Revised Date: July 2015)
Prepared by: Design/Oper/Monitor

